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THESIS

AN ANALYSIS OF THE FEEDBACK PROVIDED
FROM THE MARINE CORPS
COMBAT READINESS EVALUATION SYSTEM

by

Thomas P. Finnerty

December 1983

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The approach of the study was multi-disciplinary with a detailed emphasis on the economic question of how better

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The results of the study are displayed as an eight-step feedback model which is based on accepted theory in the fields of management control and evaluation theory. These results are communicated to the reader as a descriptive model.

The incorporation of this model as the Standard MCCRES Feedback Procedure will significantly enhance the value of the results to the evaluated unit and will improve the understanding of the resource allocation needs at all levels.

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An Analysis of the Feedback Provided from the Marine Corps Combat Readiness Evaluation System

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I. INTRODUCTION

The Military has long recognized the need for forces to be prepared for combat. The United States Marine Corps has historically been considered this country's force in readiness. A means to evaluate and measure readiness, called the Marine Corps Combat Readiness Evaluation System (MCCRES), was implemented by the Service in 1977. MCCRES was designed to provide readiness information to all levels of command. However, the system's ultimate value lies in the communication of information to the unit evaluated and to the higher level commands that can support improved allocation of resources and, ultimately, a higher level of readiness. This research views the MCCRES from an interdisciplinary perspective and specifically looks at the economic consideration of improving the allocation of scarce resources of manpower, equipment and training time.

A. PURPOSE

The purpose of this thesis is to look specifically at the feedback resulting from a MCCRES evaluation and to consider all of the MCCRES information available to the Marine Corps and to determine how that information could be used to improve combat readiness.

B. SCOPE/METHODOLOGY

Initially a detailed literature search was conducted into the areas of management control and evaluation theory.

Following the detailed literature search, the background and development of MCCRES was reviewed. The MCCRES is applied throughout the Marine Corps to evaluate ground and air combat, as well as combat service support units. Most commonly the MCCRES is applied at the infantry battalion and aviation squadron level. In total over 500 MCCRES's have been conducted since implementation in 1977. Therefore, a sizeable body of Marine Corps Officers still on active duty have served in key billets during MCCRES evaluations. To capitalize upon their experience a field study was conducted which included interviews with the initial developers of MCCRES (both Marine and civilian personnel). In addition key questions on MCCRES feedback were posed to those who had been involved at all levels of MCCRES but with special emphasis on those who had served as unit commanders, senior evaluators, or division or squadron MCCRES officers. Based on this research the answers to questions posed by this thesis were answered.

C. ANALYSIS

The information obtained was subjected to two levels of analysis. First specific responses to the field study were analyzed through the application of content analysis. Next an analysis of general responses to the data collected was conducted identifying MCCRES elements which were repeatedly presented by those interviewed. Finally, a summary of unsolicited comments were compiled to provide completeness to the

study and are suggested as areas for further research on the subject.

D. CONCLUSIONS AND RESULTS

The conclusions and results are provided in the form of a feedback model consisting of the following eight elements:

1. Pre-MCCRES Brief
2. Realtime Feedback
3. Evaluator Worksheets
4. Two-way Debrief
5. Computerized MCCRES Printout
6. Comparative Percentile Results
7. Follow-up Report
8. Trend Analysis

Overall the MCCRES is viewed as a valuable and necessary measure of unit readiness. However, to maximize the effectiveness of MCCRES timely distribution of results must be made to the unit evaluated and all others directly in the chain of command. The timely distribution of results will allow for improved resource allocation. Specifically the distribution of results has a high value for improving the use of limited training time and the development of doctrine that supports the effective and efficient use of Marine Corps resources. Thus regular distribution of generic results should be provided to all training and doctrine commands throughout the Marine Corps to improve areas consistently identified as deficient.

II. BACKGROUND

The Marine Corps is interested in assessing Unit Combat Readiness. Readiness is generally viewed as the peacetime level of preparedness to go into combat. The Marine Corps Combat Readiness Evaluation System (MCCRES) is designed to measure units' level of readiness through simulated combat conditions as determined by specific criteria set forth in the form of mission performance standards, tasks and requirements, and as judged by experienced, expert evaluators [Ref. 1]. The readiness demonstrated is actually a complex set of results based on the effective allocation of resources by the service and the unit commander [Ref. 1]. Management control encompasses all management actions taken by the service and the unit's commander to bring the unit to peak efficiency. The evaluation system employed is a detailed effort to quantitatively determine the success of that resource allocation. This chapter explores the key concept of readiness as it has historically evolved. It discusses the basics of MCCRES and lays groundwork for the detailed research that is directed at answering key questions involving feedback of MCCRES data to the unit commander for the specific purpose of upgrading deficiencies.

A. MARINE CORPS COMBAT READINESS EVALUATION SYSTEM (MCCRES)

Historically the Marine Corps has been called upon as a ready force to meet contingencies on short notice world-wide.

The specific Marine Corps Missions are detailed in the National Security Act of 1947. The unique air-ground combat team organization in which each unit ranging in size from the Battalion-Landing Team (BLT) to Marine Amphibious Force (MAF) is task organized with Marine Corps Air, Ground, Combat Support, and Combat Service Support elements making the organization uniquely suited to respond rapidly to U.S. global needs. Recent incidents such as the 1979 Iranian Crisis and the 1982 Lebanese Crisis have placed current emphasis on this historic role.

1. Purpose

The operational capabilities of combat units describe their abilities to function for their intended purpose. It is, therefore, necessary that some means be used to estimate their ability to perform their intended mission short of actual combat. In 1976 the Commandant of the Marine Corps (CMC) identified the need to develop an operational readiness evaluation program. In his Posture Statement to Congress for 1978, shortly before MCCRES was formally introduced, General Louis H. Wilson, Commandant of the Marine Corps, made the following statement describing a need for:

> ...an improved readiness evaluation system to, provide a timely and accurate evaluation of the readiness of the Fleet Marine Forces, including reserve units, to accomplish assigned missions. [Ref. 1: p. I-A-1]

The Marine Corps began using the system in July, 1978. Since that time the system has been used to test all Marine Corps Infantry Units, Fixed Wing Squadrons, Rotary Wing and Observation Squadrons, Combat Support and Combat Service Support

element, both regular and reserve, at least once every 24 months. In his FY-84 Posture Statement to Congress, General Robert H. Barrow (the Commandant of the Marine Corps) made the following comment about MCCRES.

> A key element in the readiness equation continues to be operational performance standards. Even before these units deploy, we evaluate their capabilities to accomplish their assigned missions through the rigorous Marine Corps Combat Readiness Evaluation System. The System objectively evaluates the combat readiness of all active and reserve FMF (Fleet Marine Force) Units. [Ref. 2: p. 47]

2. Theory

The goal of MCCRES is to test the combat readiness of Marine Corps units. These tests have been developed to evaluate the five types of units mentioned previously. There are difficulties in applying a standard such as MCCRES. The real question that needs to be answered for the organization is: "Can the unit do the job?" [Ref. 3: p. 1] Since the real answer can only be obtained under actual combat conditions, we must substitute simulated combat for actual combat. Thus the question that is answered is: "How close is the execution to doctrine?" [Ref. 3: p. 1] Thus for MCCRES we test adherence to doctrine, under simulated combat conditions as a proxy for the real question.

3. Scoring/Results

The guidance for MCCRES is defined in detail by Marine Corps Order (MCO) 3501.2, Volumes I-X. This provides details on how the MCCRES is applied to each type of unit. The evaluation is broken down into ten (10) categories that are mutually exclusive and collectively exhaustive.

1. Reporting to higher level of command.
2. Preparing for operations
3. Communicating (including communications SOP)
4. Performing as Marines (discipline, dispersion, camouflage, concealment, using weapons, and so on)
5. Delivering supporting fire
6. Planning of operations
7. Conforming to doctrine
8. Executing Operations
9. Providing combat service support (including medical support)
10. Supervising required actions by individual Marines.

Each category corresponds to a vital aspect of the unit's performance [Ref. 3].

For an Infantry Battalion the evaluation is divided into 19 Mission Performance Standards, 145 Tasks, and 793 Requirements. Each Battalion is not tested on all MPS, Tasks, and Requirements [Refs. 1, 4]. The final result is a "Combat Ready/Not Combat Ready" for the unit evaluated based on the overall judgment of the senior evaluator. Results are also provided as percentile scores for the Section, MPS, and Tasks.

The format for information provided is as follows:

Infantry Unit

Section	2.0	Operations Performed	% Score
MPS	2.A	Actions by Marines	% Score
Task	2.A.1	Discipline	% Score
Requirement	2.A.1.1	Self Discipline	% Score*

*Note: Only a yes/no is given for a Requirement, thus 100% = Yes and 0% = No for each Requirement Graded

For example, the Infantry Evaluation is subdivided into four Sections: Section 2.A identifies standards applicable to all evaluations. It is divided into three MPS, the first of which is Action by Marines. 'Actions by Marines' is subdivided into 13 Tasks--the first, 'Tasks, Discipline' is subdivided into nine Requirements. The first of these requirements is 'Self-Discipline.' Requirements are evaluated as: Yes/No/Not Applicable. Section, MPS, Tasks, and Requirements' overall evaluations are each given a weighted percentile score based on the number of Yes's for Requirements under the respective category.

4. Procedure

The MCCRES is divided for simplicity into five phases. Phase One requires determining the appropriate MPS to be evaluated based on Marine Corps Order 3501.2, Vol. I, and the appropriate volume that applies to the unit being evaluated--for instance, air or combat-service support. Phase Two consists of briefing evaluators [Ref. 5]. Phase Three is the actual evaluation under simulated combat. During this phase the evaluators actually make the Yes/No evaluations of the requirements. They are guided by detailed Key Indicators (KI) which assist the evaluator in making the appropriate choice [Ref. 4]. Phase Four consists of compiling the evaluation results and determining the percentile scores as well as the "Combat Ready/Not Combat Ready" determination by the senior evaluator.

Officially, there is no relationship between the numerical score for the Battalion and the Combat Ready/Not

> Combat Ready rating. It is possible, for example, that one battalion with an overall numerical score of 50 could be judged Combat Ready, while another having a numerical score of 75 could be judged Not Combat Ready. [Ref. 6: p. 40]

Phase Five, the final phase, is the debrief of the evaluated unit by the evaluators as well as the detailed written report (computer printout) which is provided to the evaluated unit. Other reports are forwarded to Headquarters Marine Corps (CMC)--an initial message report within 10 days and the detailed report within 30 working days [Ref. 1]

B. READINESS

At the center of any Readiness Evaluation System is understanding what is meant by the key concept of "readiness." The inherent difficulty in describing this term makes any evaluation, measure, or model of readiness all the more complex. Thus we must explore the meaning of "readiness."

1. Definition

Usage of the term "readiness" has tended to change even at the highest levels within the Department of Defense (DoD). In FY 1977, then Secretary of Defense, Donald H. Rumsfeld, used the following definition of readiness:

> "Readiness" is a concept that integrates the diverse factors that affect the ability to deploy, engage, and sustain effective combat forces. It starts with the overall ability and proficiency of U.S. fighting men... An equally important determinant of overall readiness is the availability, capability, and condition of the force's fighting equipment. [Ref. 7: p. 2]

In FY 1978 the same Secretary of Defense is quoted as follows:

> "Readiness" refers to the capability to respond adequately to diverse situations and to sustain that response as long as necessary. The "Readiness" of Defense Combat Forces depends on a myriad of diverse and often interrelated factors. [Ref. 7: p. 2]

In recent years the concept has taken a more standardized definition under the current administration. However, in reviewing historical literature concerning readiness, it must be remembered that it does not have consistent meaning. In address to Congress on February 8, 1982, and January 31, 1983, the Secretary of Defense Weinberger used the following definition:

> Readiness is the ability of a forces, units, weapons systems, or equipment to deliver the outputs for which they were designed (including the ability to deploy and employ without unacceptable delays). It depends on having the required quantities of equipment in the hands of the units on a day-to-day basis and on having the required number of adequately trained people assigned with the necessary mix of grades and experience level and to ensure that people and machines can work together. [Ref. 8: p. 1-28]

This definition includes training (individual and unit), material, equipment, logistics, and personnel all as part of the readiness definition.

For the purpose of continuity and brevity, the following definition of readiness is used on a day-to-day basis by the Marine Corps and is the accepted definition from JCS, Publication 6, used for the DoD Unit Reporting System (UNITREP).

> Readiness: ability of forces, units, weapons systems, or equipments to deliver outputs for which they were designed (includes the ability to deploy and employ without unacceptable delays. [Ref. 9: p. 1]

It is further amplified as follows:

> Readiness is essentially a measure of pre-D-Day status (extending at most into initial combat operations) while sustainability is a Post-D-Day measure. Hence, we often speak of peace time readiness, but combat sustainability. [Ref. 9: p. 1]

For consistency this definition of readiness, as amplified, will be used throughout this study, since it provides the currently accepted DoD definition. In the literature the terms 'effectiveness' and 'sustainability' are often interchanged to indicate Post-D-Day combat capabilities. Because of its broader implications the term effectiveness will be used herein to mean Post-D-Day status. Hereafter we can refer to Pre-Combat Readiness and Combat Effectiveness.

2. Indexing

The difficulty in defining readiness may be exceeded only by the difficulty of measuring it. Many attempts have been made to index readiness, but to date none have been successful or achieved wide acceptance. As described by Barzily, Marlow, and Zacks, in their "Survey of Approaches to Readiness," the motivating factor common to all attempts is to measure the effects of budgetary changes on readiness. They reviewed a number of readiness indexes, such as the U.S. Navy METRI Project, MARIS Project, MAXCAP Models, and others and found that:

> The readiness indexes posed do not attain the desired objective. They are usually very insensitive to changes that occur at the lower echelons and, furthermore, they are generally improper indexes of readiness. [Ref. 10: p. 25]

3. Economic Question

The context of readiness described in both Definitions and Indexing has strong economic overtones. The approach herein will be to treat readiness as an economic question, i.e., the allocation of scarce resources of training time, material, equipment, logistics, and personnel as inputs with the desired results of maximizing outputs. The true output of a combat organization is effectiveness in combat. There is obvious difficulty in measuring that output. Because of this difficulty we generally turn our attention to proxy measures such as number of aircraft or number of ships. The difficulty of this problem was recently stated as follows in a study by Rand for the Assistant Secretary of Defense/Manpower, Reserve Affairs, and Logistics:

> The output of an Army Maneuver/Firepower Unit is especially difficult because such units have no single output or product that can be directly related to their mission. [Ref. 12: p. 7]

In a recent study by Steven L. Funk, several observations were made which have application here. He states that although peacetime Army readiness is an honored theme, it is not always practical. This is a result of preparedness not being the actual primary peacetime mission, but just one of several competing missions that take resources of manpower, equipment, and training time. Funk cites major factors that detract from the unit being able to train for combat situations:

(1) Lack of resources to accomplish requirements (i.e., skilled personnel, time, ammunition, repair parts, and facilities),

(2) changing and competing priorities that fragment resources and negate planning, and
(3) a climate that deprives unit leadership of decision "maneuver space" and fragments their attention (i.e., centralized decision making/ control, burdensome administration, low unit cohesion and ambiguous institutional values. [Ref. 11: p. 6]

Although the previous study was made of the U.S. Army, many of the detractors apply equally to the Marine Corps. Some policies such as Unit Rotation (i.e., the policy of maintaining unit integrity by replacing an entire battalion/ squadron rather than replacing individuals) and Deployment-Lock-On periods (i.e., the policy of assigning resources to a unit well in advance of a planned deployment and then maintaining and replacing those resources through the training cycle and into deployment) have lessened the negative effects. However, in the Marine Corps the problem of competing priorities will always exist. The unit commander is constrained by many elements beyond his control [Ref. 11]. Thus the question of unit readiness is certainly one of economic priorities or competing priorities. A large part of the readiness results then depends on the effective resource allocation both to the unit and within the unit. Thus MCCRES attempts to evaluate the readiness of a unit through simulated combat conditions and to measure how closely the unit performance conforms to doctrine.

C. MCCRES AS THE EVALUATION SYSTEM

1. Research

The evaluation system employed by the Marine Corps has undergone much study from the standpoint of developing an

objective versus a subjective system of evaluation. Much of the statistical work for this has been done by the George Washington School of Engineering and Applied Science [Refs. 3, 4]. Additionally, the question of evaluator bias was recently studied at the Naval Postgraduate School, Department of Administrative Science [Ref. 5].

As a result of the George Washington University studies, it was determined MCCRES had the following merits:

a. Most requirements are requests for descriptive data and not for judgments. Judgments were previously made by defining the requirements and assigning weights.

b. The details of the doctrine are given and interpreted in the requirements, thus avoiding the possibility of being mis-interpreted or forgotten by the evaluators.

c. The execution of most requirements consumes short time periods and thus the evaluators' memories are not overburdened.

d. Assigning a score of a YES or NO is easier than assigning scores on any other scale.

e. The set of the requirements exhausts the details of the executions. [Ref. 3: p. 25]

Though the George Washington University research identifies merits of MCCRES, it does not address the question of what feedback should be provided to the evaluated unit.

2. Feedback

The purpose of this research was to determine the types of feedback that are most useful and valuable to an evaluated unit. Feedback is a necessary part of any control or evaluation system. In December, 1981, B. General A. A. Sordo, then

Director of the Marine Corps Training Division, made the following comment:

> The evaluation and feedback process in training is one where we need to do substantial work. MCCRES helps us greatly. In the future, as we link the individual training standards of our ITS System to MCCRES Mission Performance Standards, we'll be able to do better! But above and beyond that, our measurements of adequacy and effectiveness are for the most part decentralized and highly subjective and impressionistic. In the long run we rely on our assessment of the unit or organizational capabilities as the best gauge of adequacy in training preparation. [Ref. 13: p. 54]

D. RESEARCH QUESTIONS

As a result of the need to define specifically the feedback and information needed by evaluated units as the result of MCCRES, this study was undertaken. The following questions are asked by this thesis:

1. Primary

   a. After a MCCRES, what information should be fed back to the evaluated unit commander?

   b. In what form should the evaluation feedback be?

   c. What channel(s) should be used to provide the feedback information to the unit commander?

2. Secondary

In addition to the specific questions above, there are several subsidiary questions which arise as a logical consequence of the primary questions. They involve the following topics: (1) validity of comparing MCCRES results given under differing conditions, (2) MCCRES contribution to effective

training, and (3) time availability and followup to ensure correction of deficiencies identified during the MCCRES.

E. METHODOLOGY OF LITERATURE RESEARCH

To properly answer the questions posed, the author took a multi-disciplinary approach. The theories of management control and evaluation provide a great deal of insight toward understanding the complexities of the information needs. Thus these two fields will be explored in detail in the next chapter. In addition much work has been done in the area of modeling effectiveness. This has been done from the perspective of applied, conceptual, statistical and economic models. Since these provide rich theories for the understanding of the measurement and indexing of effectiveness, these concepts are explored.

F. SUMMARY

This chapter was designed to provide a history of MCCRES, establish the need for such a system from the Marine Corps perspective, give some basic understanding of the system, and provide a detailed understanding of the inherent difficulties of efforts to evaluate the concept of readiness.

Readiness is approached from the standpoint of economics, that is the application of scarce resources (inputs) of time, men, materials to the process of simulated combat. The unit commander controls the organization with a highly sophisticated management control system in accordance with the external and

internal objectives and policies. MCCRES is a unit evaluation system which evaluates the management control process of that organization. The primary questions are then presented as the basis of this research. The following chapters will explore briefly the theory of management control systems and in detail evaluation theories and models with specific emphasis on feedback mechanisms.

III. MANAGEMENT, MANAGEMENT CONTROL, EVALUATION, AND FEEDBACK

The topics to be covered in this chapter are as follows: first the topic of management will be described in a general context; management control and its implications for feedback will be explored; then, a series of selected evaluation theories will be presented in detail. Finally a series of evaluation models with application to the military will be provided. Emphasis in these models will be on feedback theory and the ideas on feedback posed by the authors. A summary of feedback as developed by the models will be presented also.

A. MANAGEMENT

Management is described as: (1)"art or act of managing; conduct; control; direction. (2) Judicious use of means to accomplish an end; skillful treatment" [Ref. 14]. Webber describes it in many contexts--experience, training, practice, theory, art, and science [Ref. 15]. The simplest definition and one often heard is the art of getting things done through people. The elements, however, that all descriptions of management have in common are that managers engage in two important activities: planning and control [Ref. 16]. It is important to clearly make the distinction between the terms management and leadership. The military has long recognized

that the term "leader" has much broader implications than that of manager. The unit is more than the sum of its parts; and, therefore, the military commander's responsibility is not only for the technical and tactical proficiency of the unit, but for the overall cohesive functioning of the organization [Ref. 17]. In this context it is fair to say that management skills are a necessary subset of leadership and that the good leader is necessarily a good manager, however, the converse of that statement is not necessarily true.

B. MANAGEMENT CONTROL

Robert Anthony placed management control in a hierarchical framework as follows in Figure 3.1.

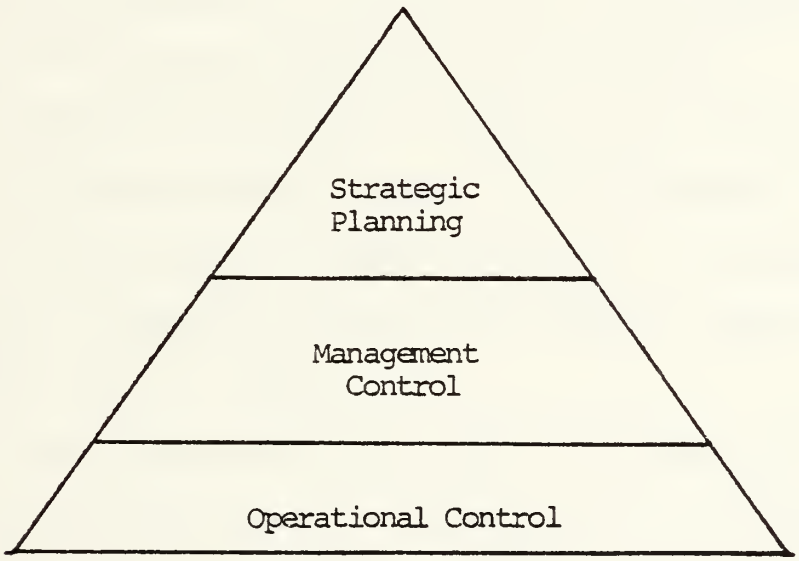


Figure 3.1. Anthony Framework

He described this classification for any large organization where these functions are present.

> Strategic planning is the process of deciding on objectives of the organization, on changes in the objectives, on resources used to attain these objectives, and on the policies that are to govern the acquisition, use, and disposition of these resources. [Ref. 18: p. 16]

He further described management control as follows:

> Management control is the process by which managers assure that resources are obtained and used effectively and efficiently in the accomplishment of the organization's objectives. [Ref. 18: p. 17]

Strategic planning is the highest level of management where the long range objectives, policies, and plans of the organization are made. The management control level involves middle management, the timeframe is shorter, about 12 months, and the planning involves budgeting, training, etc. The lowest level of control is operational where the day-to-day functioning of the organization is carried on; the implementation of plans and policies are executed at this level.

Lebas describes management control as an enlarged feedback loop which affects human behavior and performance [Ref. 19]. Hofstede also provides a useful definition of management control "...as a pragmatic concern for results, obtained through people" [Ref. 24: p. 193].

Given the purpose of this study is to identify feedback needed for improved resource allocation, it is important to focus on the terms "effectiveness" and "efficiency", which are present in many of the definitions of management control. In this context the terms effectiveness and efficiency are defined as follows:

> Effectiveness...relates to the accomplishment of the cooperative purpose...when a specific desired end is attained we shall say that the action is effective. [Ref. 18: p. 27]

> Efficiency...refers to the engineering sense of... the optimum relationship between given inputs and outputs. [Ref. 18: p. 27]

In Lebas' work he identified the major schools of thought on management control.

1. Organizational Process Approach

The Organizational Process Approach is that taken by Anthony. He divides the feedback loop into three distinct parts, described previously as strategic planning and management control and operational control. This approach reduces the human motivational problem to what Anthony calls "goal congruence" or the various ways in which the manager can be encouraged to take actions which are in the best interest of the company. The goal congruence is then reduced to procedures within the organization such as performance evaluation, reporting, and budgeting [Ref. 19].

2. Informational Economics Approach

The Informational Economics Approach is a more abstract theory. It proposes that only models based on expected utility maximization need to be considered. A set of subjective probabilities are assumed to be known by the decision-maker and that the decision-maker will always act to maximize utility. In this approach, good performance is described as the action which minimizes the end result differences between the expected outcomes and the actual outcomes. The emphasis, however, is

on the decision model not the outcome. A further aspect of the theory is its emphasis on maximizing the expected utility. This leads to the conclusion that the control process is a prior phenomenon that suggests management spend more time preparing decisions than evaluating outcomes [Ref. 19].

The major limitation to the Information Economics Approach is that it is all based on the Savage-Rational Man Model and that an effort will be made to maximize utility in every case. Although an interesting theoretical model, it relies heavily on the calculus of maximizing utility in each and every case [Ref. 19].

3. Behavioral Approach

This is actually a loosely structured set of approaches to the concept of management control taking ideas from many theories. Two descriptive ideas that it entails from Herbert Simon are:

> Satisficing...interrupting the action selection process as soon as the first acceptable action has been found.

And

> Bounded Reality...the notion that man is a piecewise rational. [Ref. 19]

Other ideas presented by Ouchi and referred to by Lebas have shown that:

> ...rigorous output control is the most effective way to induce good performance in managers. [Ref. 19]

Other topics in the behavioral approach deal with the structural and inter-personal variables in management control. The power, therefore, of each structural center lies in its

ability to reduce uncertainty for other units. The interpersonal effects on behavior are viewed by Lebas in terms of Kantz and Kahn's model of role sender and role receiver. Here the control will be good if the expectations are interpreted accurately by the receiver and if the single receiver is not subjected to conflicts in role expectations in the different social systems in which it operates. Additionally, control requires acceptance of the role by the receiver [Ref. 19].

Lebas views the real value of behavioral approaches in their diversity and being based on observations of people in real situations. The limitations come from their multiplicity and that creates difficulty in setting any sort of coherent guidelines for a manager to employ [Ref. 19].

4. Integrated Approach

The previous broad structures of management control system have been integrated by Ansari in what he refers to as an operational systems concept [Ref. 20]. He views the previous perspectives on management control systems in two versus three broad categories. Grouping the structural view (Operational Process and Informational Economics) and the behavioral views:

a. Two Perspectives

Ansari describes the structural view of management control as that adapted by researchers in cybernetics, accounting, and management information systems--those that concentrate primarily on the information and communications aspects of

control systems. The behavioral approaches are identified as those that are based primarily on human behavior in organizations and regard control as a problem of encouraging subordinates to achieve performance goals. In this context he uses control system to describe:

> ...those arrangements and actions designated to facilitate its members to achieve higher performance with least unintended consequences. [Ref. 20: p. 102]

b. Elements of Management Control Systems

There is agreement among most authors reviewed from both the structural and behavioral schools that all management control systems consist of two elements. The first being "an information network which prescribes the rules for measurement, collection, processing, and transmission of information" [Ref. 20: p. 102]. This element causes the information on performance, goals, outputs, and exceptions from plans to be transmitted to managers. The second element is the set of social relationships through which the control system achieves the organizational goals [Ref. 20].

c. Joint Consideration

Ansari argues that management control is actually best approached from a combination of the structural and behavioral ideas. He declares that the current phase of design is more situational and that it focuses on the more important issue of improving performance instead of the narrow concept of constraining behavior. The information that is provided passes through two phases. First, it must be perceived before

it can be used and second not only managers, but subordinates, must also use information for self-evaluation and guidance of performance. He further identifies five considerations which are characteristic of all information structures.

1. Nature of Measures--the subordinates' motivation is affected by the completeness, objectivity, and influence of the characteristics of performance measures.

2. Source and Order of Presentation--The source of the information must be credible and the order of presentation can change the perceptions of the information.

3. Timing--Both the speed and frequency are important, too long an interval may cause the user to lose interest or be distracted.

4. Route--The route may alter the information and thus the sender and receiver may not be sharing the same information.

5. Shared Information--The others with whom the information is shared thus may affect the recipient's view of the information with regard to fairness and accuracy. [Ref. 20]

All of these considerations must be made by the designer in any information, evaluation system. To summarize the characteristics of the integrated model, this takes into account both the structure of the organization and its informational systems as well as the social side considering subordinate personality and leadership style. The designer of a management control system should combine components (such as an evaluation system) in such a way as to minimize cognitive conflicts and encourage behavior which resolves conflict with positive results for the organization. It should also be kept in mind that if rewards for performance are too highly

contingent on outputs of the information structure, the greater the chance that there will be controversy over the output [Ref. 20]. A good example of this controversy is discussed by Anthony Hopwood in the way in which accounting data was used in the performance evaluation of managers.

Based upon a study he conducted, Hopwood identified four ways in which accounting data was used in evaluation.

(1) Budget Constrained Style--required to meet a budget but not concerned about costs.

(2) Budget Profit Style--concerned with both meeting a budget and with costs.

(3) Profit Conscious Style--concerned with costs but not with meeting a budget.

(4) Non-Accounting Style--not concerned with meeting a budget or with costs. [Ref. 21]

He concluded that based on management style, many dysfunctional behaviors may occur as the result of emphasis on accounting data results in evaluations [Ref. 21].

5. Other Thoughts on Management Control

Management control contains many rich concepts which play a great part in the theory of evaluations. San Miguel has made several interesting observations on management control:

> The end is a system that enable managers to make sound decisions as to the efficient and effective allocation of human, physical, and financial resources to attain the objectives of the organization. [Ref. 22: p. 177]

San Miguel further characterizes management science's attempts to deal with modeling of complex control systems. He characterizes the quantitative and economic decision tools' attempt to simplify the decision making in large scale organizations as falling short of their objectives--primarily because of the lack of knowledge of human behavior and the ability to quantify it. He further cites measurement and communications to be at the center of control systems, internal planning, and reporting. There is general agreement in the management control literature that measurement and communications systems have an important impact on the behavior of individuals in organizations, their motivations and, thus, their performance. Therefore, the areas of measurement and evaluation are legitimate concerns for the design of any management control system [Ref. 22].

6. Summary

The intent in this section was to set the stage through the discussion of the broader topics, management and management control, for what is to be developed in the next section on evaluation. Management control is a complex topic which encompasses the broad aspects of all the control systems imposed on the organization through strategic plans and policies as well as those developed within to assist the manager in his control internally.

C. EVALUATION OVERVIEW

Evaluation models that are directed at readiness all embody a common goal. Each in its own particular way attempts

to identify a definitive measure or some particular relative measure of the unit's Pre-D-Day preparedness for combat. Preparedness may be viewed as readiness which acts as a proxy measure for the military unit's ability to perform in combat. Similar efforts are made to evaluate the ability to perform in civilian organizations. In its simplest form, output is measured by production level or quantity produced by a production facility in a given time period. Various attempts are also made to measure profitability of the firm. Microeconomic theory assumes that each firm is attempting to maximize profit [Ref. 23]. Therefore, some measure(s) are applied to the fiscal results of each period to determine the financial performance of the organization during the period [Ref. 23]. Similarly it can be assumed that each unit tries to maximize its readiness. This section reviews efforts that have been made to evaluate, measure, and model performance both in theory and practice. This section covers the general theory of evaluation, and looks at several well-known evaluation systems.

1. Evaluation Defined

The term evaluation is defined differently by various authors; however, Stufflebeam brings together three generally accepted definitions of evaluation and provides a comparison.

a. Measurement Definition

Evaluation is identical to measurement. It builds on attempts to measure psychological attributes or characteristics [Ref. 24: pp. 9-10].

b. Congruence Definition

Evaluation is a comparison of the congruence between performance and objectives. This provides emphasis on objective performance also [Ref. 24].

The measurement definition considered evaluation to occur after the fact and to measure some attribute. In contrast the congruence definition refers to on-going evaluation in meeting the objectives [Ref. 27]. According to Stufflebeam organizations will pick objectives which are specific and have objective measureable results. That is because to make the congruence definition work, there must be some selection of objectives to be measured. Stufflebeam further indicates that the congruence definition creates a need for the evaluator to find short term measures of performance. These indicators, identifiable outputs, or behaviors come to be viewed as performance. These identifiable outputs become the ultimate criteria of all organizational decisions. The congruence definition has advantages, but the need to find measureable objectives creates problems [Ref. 24].

c. Judgment Definition

The professional judgment definition allows full evaluation of all organizational attributes both quantifiable and non-quantifiable, and is easy to implement [Ref. 24]. This definition is often applied where the dimensions to be measured are difficult to define and more difficult to quantify. The judgment definition has its problems. The evaluation

is, by definition, based upon the judgment of an individual which lacks objectivity identifying what data are used and how they are used [Ref. 24].

Table (3.1), taken from Stufflebeam, provides a comparison of advantages and disadvantages of each definition.

2. Principles of Evaluation

There is a good deal of general agreement that for an evaluation to be effective it must be consistent with the purposes, objectives, and goals of the activity being evaluated [Refs. 5,25,26].

a. Evaluations must be conducted in terms of purpose--the evaluator and the evaluated must fully participate and work for the common goal.

b. Evaluation must be cooperative--all involved as both the evaluators and evaluated must fully participate and work for the common goal.

c. Evaluation must be continuous--it must be on-going; a one time effort with no followup is an affront to the professional concepts.

d. Evaluation must be specific--specificity is the key, generalizations do little good to help remedy deficiencies or to identify true strengths.

e. Evaluation must provide the means and focus for trainers to be able to appraise themselves, their practices, and their products.

f. Evaluation must be on a uniform and objective methods and standards.

3. Summary

The definition and principles of evaluation were presented in this section. The evaluation definition as described by Stufflebeam has three distinct interpretations. There is more general agreement on the principles of evaluation and

TABLE 3.1

Advantages and Disadvantages Accruing from Different Definitions of Evaluation

	Advantages	Disadvantages
(1) Measurement	Builds directly on scientific measurement	Narrow instrumental focus
	Objective	Inflexible because of time and cost to produce new instruments
	Reliable	Obscures judgments and the criteria for making them
	Data mathematically manipulatable	Eliminates variables currently considered as not measurable or labels them unimportant
	Norms and standards emerge	
(2) Congruence	High degree of integration with the process	Places evaluator in technical role
	Data available on process and structure	Focuses narrowly on objectives
	Possibility of feedback	Elevates behavior as the ultimate criterion of every action
		Focuses on evaluation as a terminal process
(3) Judgment	Easy to implement	Dictated mainly because of ignorance or lack of sophistication
	Brings all variables into consideration	Questionable reliability
	Takes experience and expertise into account	Questionable objectivity
	No time lag while waiting for data analysis	Not susceptible to ordinary scientific, prudential measures
		Both data and criteria are ambiguous
		Generalization very difficult

Source: Adopted from Ref. 24: p. 15.

to a large degree these embody a common sense approach for the usefulness of any evaluation. Next, four evaluation theories will be presented.

D. EVALUATION THEORY

There are many theories of evaluation. There is no attempt herein to be all inclusive. What is intended is to introduce a variety of theories which exist and to show their relationship to the questions pursued in this research.

1. Management by Objective (MBO)

In recent years probably no system of personnel management has gained more attention than Management by Objective introduced by Peter Drucker [Ref. 27]. The MBO approach is applied to individual as well as organizational evaluation systems.

> The MBO Approach assumes that one would perform more effectively because you have planned your own objectives and could control your own behavior. [Ref. 15: p. 316]

MBO takes a humanistic or human values approach to managing people. The basic steps in MBO are as follows:

1. The subordinate proposes goals for the next time period.
2. The subordinate and superior discuss, modify, and reach agreement.
3. Periodic formal and frequent informal review.
4. Subordinate reports on performance at the end of the period.
5. Repeat the cycle. [Ref. 15: p. 316]

MBO deals well with a number of problem areas in evaluation systems. It is designed to create more two-way communication.

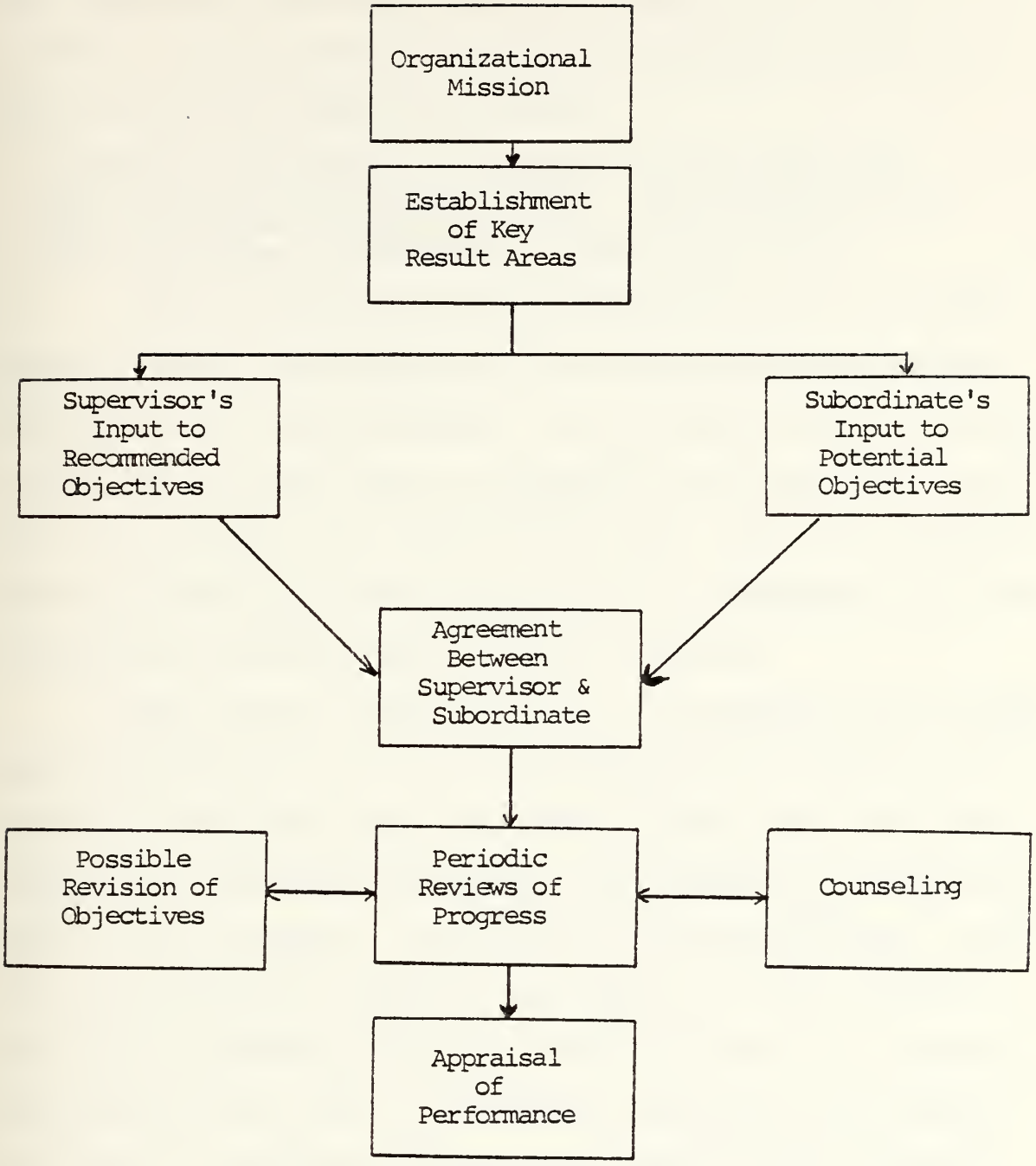
It has found success in both the private and public sector. In their article on "Employee Growth Through Performance Management," Beer and Ruhr found success with employment of MBO at Corning Glass Co. [Ref. 28]. In addition, the Department of Health, Education, and Welfare found it a most valuable system in pursuing management and control of their many diversified programs [Ref. 29]. Figure 3.2 provides a simple model of how MBO is designed. It should be noted that the MBO model focuses on performance as identified and measured through objectives agreed upon by supervisor and subordinate [Ref. 30].

Feedback in the MBO System is scheduled at regular intervals. The meetings can be used to compare results to the objectives set as well as to help make future objectives more realistic. The objectives themselves are determined by higher level management, but in coordination with the employee or unit. To a great extent the comparison of goals set and achieved are reported by the individual being evaluated. Typically the manager submits an evaluation of each objective based on the following classification system:

1. Satisfactory
2. Minor Problem
3. Major Problem

Feedback is handled by face to face conferences between the evaluator and employee.

In a recent Marine Corps Gazette article, Major James M. Clarke reflected his good experiences with the MBO merit



Source: Adapted from [Ref. 30: p. 223]

Figure 3.2. Sample MBO Model

pay system used with high level GS employees. He referred to MBO in the context of a personnel evaluation system; however, it also has application here:

> To improve performance counseling, we must get away from subjective judgments through a more formal system which concentrates on objectives. The merit pay system provides a good model. [Ref. 31: p. 47]

Major Clarke's article provided support for the MBO method because clear objectives are established and regular communications are encouraged. In the Marine Corps' personnel system, as in other areas of inspection and evaluation, professional judgment has historically been used as the primary method of evaluation and lack of specific objectives has reinforced the reliance on the judgmental method.

MBO places a great emphasis on the objectives and the regular feedback on how the evaluated worker is measuring up to those objectives [Ref. 15]. MBO further emphasizes displaying the individual's strengths and weaknesses to himself, rather than to others. Although MBO emphasizes timely, accurate, and objective feedback, the details of that feedback can only be spelled out when a system is input to a specific organization [Ref. 28]. It further encourages the feedback be given on a continual basis, not "saved up for an end of the year inquisition" [Ref. 15: p. 317].

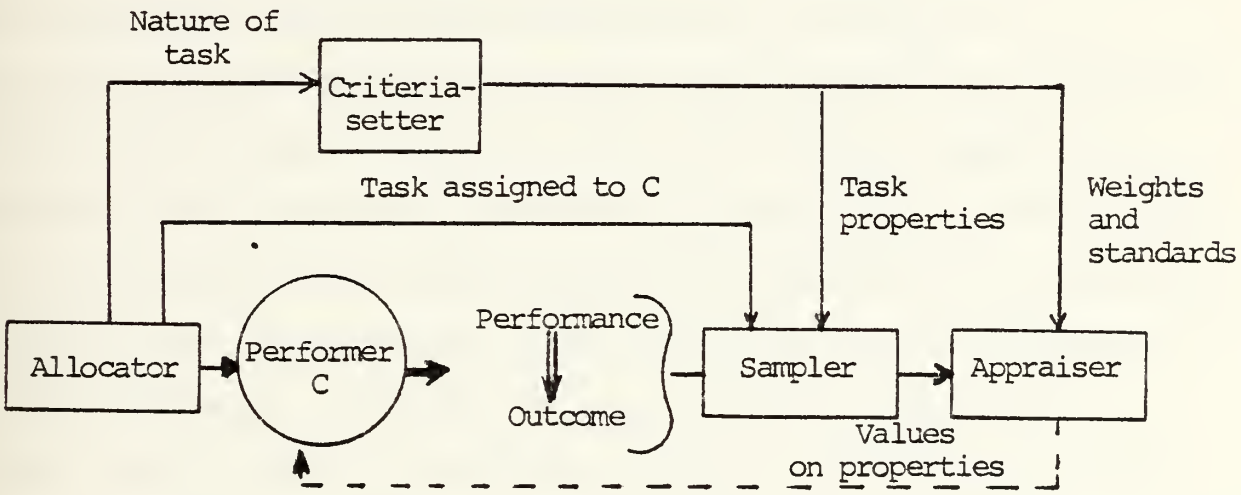
2. Evaluation and Authority

A comprehensive and ongoing study of evaluation and authority was conducted by Scott and Dornbusch (1977). In their study of professional organizations, results were

gathered from university faculty members, clergy, public school teachers, principals, nurses, and others. They found:

> Organizations are power structures in which some participants give differential access to organizational rewards and penalties in order to control other participants. [Ref. 32: p. 134]

The Scott-Dornbusch studies present a conceptual model of the relation of evaluation and authority. As a result of these studies, they developed the model presented in Figure 3.3.



Source: Adapted from [Ref. 32: p. 20]

Figure 3.3. Model of Evaluation Process with Communication Links Among Right-Holders

The model is a systems analysis approach which provides for monitoring and regulating by means of a feedback loop. This approach concentrates on the involvement of each actor in the process. The actors in the Scott-Dornbusch model are described

as follows: The allocator gives the responsibility for performing the task. The criteria setter is concerned with assessing the effectiveness and efficiency of a task performance. To a large measure the criteria is determined by the goal toward which the performance is directed. The determination of which information to use in order to arrive at a performance evaluation is the responsibility of the sampler. The appraiser uses the information on the sampled indicators and transforms the observed values into scores. The goal of the evaluation process is to provide a measure of the performer based on performance and outcome [Ref. 32]. The manager must get each of these individuals in the decision-making process and coordinate their activities. Emphasis is placed in this model on communications among the right-holders. The right-holders are those given authorized power or authority rights by the organization. The authority rights are granted to the allocator, criteria setter, sampler and appraiser. There are a variety of interconnecting links which may exist between these rights-holders which define the authority structure within any given organization. Thus the formal evaluation process is based on the structure of the interconnection among the right-holders [Ref. 32].

The Evaluation and Authority Feedback Model describes performance by direct and indirect measures. Examples could be the number of units produced as a measure of labor productivity (direct). An indirect measure is the number of professional

papers written to evaluate the productivity of a scientist or scholar [Ref. 32]. The variety of samples requires judgment on the part of the evaluator to determine what is high or low performance so judgment must be used by the evaluator. Thus, accurate appraisal of the sample taken requires a complete knowledge of the task, the performance, and the specific circumstances. Based on all of these measures the decision is then made on what, and if anything, should be conveyed to the performer concerning quality of the task performed [Ref. 32].

3. Practice of Program Evaluation

Anderson and Ball take an applied approach to program evaluation. They identify six specific purposes of program evaluation [Ref. 33]:

1. to contribute to decision about program installation,
2. to contribute to decisions about program continuation, expansion, or certification,
3. to contribute to decisions about program modifications,
4. to obtain evidence to rally support for a program,
5. to obtain evidence to rally opposition to a program,
6. to contribute to the understanding of basic psychological, social, and other programs. [Ref. 33: p. 4]

Anderson and Ball emphasize the practice aspect that evaluations can address a wide variety of questions and provide many useful services. Their experience is primarily with social programs, but it is applicable to this study. They identify a total of seven types of evaluation methods:

1. The experimental and quasi-experimental study,
2. Correlation methods,
3. Surveys,
4. Personnel or client assessment,
5. Systematic expert judgment,
6. Clinical or case studies,
7. Informal observation and testimony.

The real richness of ideas presented by Anderson and Ball involve their emphasis on feedback which they refer to as the: Communication and Dissemination of Results. They emphasive the need for communications of the results to be bi-directional. The effective communications of results are viewed as a sign of the positive health of the program. Evaluators should take pride in presenting and disseminating their results. The dissemination is more than merely a phase tacked on the end of a program; it involves more than simply telling the findings. At a minimum, what the dissemination involves is that the results should include information about the evaluation plans and procedures as well as the findings. There are also several criteria provided to guide the dissemination to various audiences. First, if an evaluation is worth doing, other groups than the evaluated organization have some interest in finding out about the results. Second, is that, given different audiences, several mediums/methods of dissemination may be called for. Anderson and Ball classify some fifteen different audiences that should at least be considered for dissemination of results [Ref. 33].

Use of results is another consideration once the evaluation is completed. The logical expectation is that the decision maker will use the results to make rational future decisions. Weiss lists several reasons why that is not always the case. The nature of the organization is sometimes opposed to the use of the results; however, if the decision maker and the evaluator have maintained close communications throughout the process, the potential objections can be reduced [Refs. 33, 34]. Particular consideration must be given not only to factual evaluation of each program, but also the salesmanship aspect of presenting the evaluations.

Anderson and Ball have adapted, from a paper by J. S. Berke a structure which they suggest should be applied when writing evaluation reports.

- Brevity and clarity. Critical findings should be summarized clearly and simply at the outset.
- Timeliness--to be useful and utilized, results must be reported according to other peoples' schedules and not the evaluator's research clock.
- Interim products and reports--these help prepare decision makers for the impact of larger, later evaluation reports. Besides, they can allow preliminary planning for utilization even before the final report is available.
- Responsiveness--he notes here that traditional researchers tend to make questions more interesting, design more elegant, analysis more comprehensive, and utilization of recommendations more guarded than necessary. [Ref. 33: pp. 107-108]

In summary the program evaluator has the responsibility to push the results of the evaluation and to bring them to the attention of all those who should be made aware [Ref. 33].

4. Critical Incident Evaluation

Critical Incident Evaluation Program involves management writing regular reports on the performance they observe. The critical incident process has as its roots the idea that actual behavior should be appraised, not traits of behavior. It is an attempt to justify ratings based on specific incidents that provide support evidence for the evaluation. Levinson places strong emphasis on the need to evaluate on how things get done and not just results [Ref. 36]. Levinson argues that in reality people are evaluated on the "how", but many are led to believe that they are just judged based on results.

Thus, the profit oriented manager pulls his company out of the "red", but is criticized for the methods used to do it. Levinson cites many deficiencies with current evaluation systems. One is that no matter how well-defined the dimensions for appraising performance on a quantitative basis, judgments on performance are always subjective and impressionistic [Ref. 36]. Second, delay in giving feedback creates frustration both when performance is good and credit is deserved, and when performance is bad and criticism is rendered long after the performance. Levinson views performance evaluation not as a technique, but a process involving both people and data. Thus, the process is inadequate [Ref. 36].

Levinson proposes that an effective critical incident model be composed of the following [Ref. 36]:

1. A dynamic job description--one which amplifies statements of job responsibility and desired

outcome by describing the emotional and behavioral topography of the task.

2. A critical incident process--this requires jointly setting objectives and discussing each piece of behavior that is judged good or bad by the manager.

3. A psychological support system--to accomplish this, the manager must learn to cope with feelings or guilt over the appraisal. He calls this upward appraisal concept in which managers who develop employees through their effective appraisal should be compensated [Ref. 36]

An interesting aspect was observed by Winton-Oberg while observing the use of the critical incident process at General Electric:

> People who received honest but negative feedback are typically not motivated to do better and often do worse after appraisal interviews. [Ref. 35: p. 64]

The whole critical incident process involves a continuous flow of feedback to the evaluated employee.

Although the critical incident process by its very nature should lead to a continuous review and communication on positive and negative behavior, that is not always the case. Also the critical incident itself is often a subjective evaluation on the part of the supervisor. The system should focus attention on actual behavior rather than on employee traits. Also it provides an opportunity for the employee to find out specifically how to perform if he wants to be rated higher the next time. This system does encourage regular feedback since the supervisor can hardly wait to the end of a period to feedback what he sees as a critical incident [Ref. 35]. One of the major factors supporting this

system is that the critical incident process takes the surprise out of the annual or semi-annual evaluation. All those incidents viewed by the supervisor as critical would have already been brought to the attention of and discussed with the subordinate. This technique provides more regular feedback to the subordinate because both good and bad incidents should be noted continually. Also if the employee feels unfairly judged, he may appeal the criticism immediately rather than waiting a long period of time [Ref. 36].

E. SPECIFIC EVALUATION MODELS APPLIED TO THE MILITARY

The approaches to the evaluation process discussed thus far have been general in nature. However, in this study evaluation processes specific to military environments were also reviewed. Following are four evaluation approaches to the military which were reviewed in detail.

1. Army Training and Evaluation Program (ARTEP)

The Army Training and Evaluation Program (ARTEP) for Infantry Battalions was reviewed during this research. In addition a detailed brief was provided by the G-3, 7th Infantry Division [Ref. 37]. The Army Program specifics are laid out for Infantry, Airborne, Air Assault, and Ranger units in one volume [Ref. 38]. That guide is further supported by local guidance at each command.

The Infantry ARTEP Evaluation has four purposes: (other references exist for ARTEP application to Armor, Mechanized units, etc.):

1. Establish infantry unit training missions with specified tasks, conditions, and standards of performance for combat-critical missions.
2. Under simulated combat conditions, train and evaluate the ability of the unit.
3. Evaluate the effectiveness of past training of all echelons of the Battalion.
4. Assess future training needs. [Ref. 38]

The evaluation is broken into three phases:

1. Critique of Leaders
2. Evaluation of Whole Battalion
3. Written Report

The ARTEP employs the following philosophy:

1. The evaluation is conducted two levels down (Division evaluates Battalion)
2. Battalion ARTEP's are scheduled every 18 months.
3. Companies/Platoons/Squadrons are evaluated annually.
4. Subunit evaluators focus on the end evaluation.
5. Evaluations are scheduled in sequential progression (squad, platoon, company, then battalion)
6. Scheduled preparation time is five weeks for a Battalion
7. Fence off the unit for two weeks following the exercise (no other requirements are placed on the unit during this period)
8. Use operating force tactics
9. Do not evaluate during other training or field exercises. [Ref. 37]

The ARTEP Evaluations are strictly conducted within the divisional unit. The Assistant Division Commander is designated "exercise director," but a sister battalion is designated as the force to provide the senior evaluator, another lieutenant colonel as well as company and other evaluators. The ARTEP is viewed as a training evaluation.

The ARTEP System provides a combination of both objective and subjective feedback to the evaluated unit. All of the tasks evaluated in the ARTEP evaluation are reported on a Satisfactory/Unsatisfactory basis. All unsatisfactory or not evaluated ratings must be explained in the remarks. This data is placed on a standardized data collection sheet. A copy is provided to the evaluated unit shortly after the exercise is completed. Additionally a copy of the data sheet is forwarded (without any identifying unit data) to the U.S. Army Infantry School, Fort Benning, GA. The data forwarded to higher headquarters is for the purpose of future training development efforts and for use in improving the ARTEP doctrine, devices, and techniques Army-wide [Ref. 38]. The overall evaluation given to a unit is a Satisfactory/Unsatisfactory. No percentile scores are associated with or computed for the ARTEP results. Thus no comparison is made from unit to unit using ARTEP data [Ref. 37].

In addition to the written report, a continuous review and exchange of comments between the evaluator and unit is encouraged. Shortly after the ARTEP is completed, an oral

debrief is held for all key personnel of the battalion and the evaluators. In some cases the detailed (good) evaluations of units to the squad level are announced to all of the troops at formation. This technique is viewed as a positive motivation for the small units and their leaders [Ref. 37].

2. Funk Conceptual Model of Unit Performance

A recent study by Steven Funk [Ref. 11] attempted to model combat unit effectiveness for the U.S. Army. He found many of the same difficulties in defining effectiveness that this author found in defining readiness. He described effectiveness as follows:

> Individual evaluators determine unit effectiveness based upon some explicit or intuitive constraint of what units are supposed to do and how that is achieved. Unit effectiveness is determined by evaluating both outcomes and processes, and is determined for performance on all tasks presented to the unit whether they are combat related or not. [Ref. 11: p. 19]

He interviewed groups of officers and senior enlisted, primarily battalion commanders, company commanders, staff officers, unit officers, and first sergeants. He also reviewed a wide array of existing predictive models from the Army, Navy, and Air Force. He identified early readiness studies such as Army Training Study (ARTS) 1977-1978, which concluded that readiness should be viewed from a perspective of relationships among personnel, weapons, equipment, resources, detractors, and incentives. He also looked at the Navy's 1974 report on readiness which stated, "Organizational effectiveness implies

an evaluative or judgmental process against an expectation or standard" [Ref. 11: p. 11].

The result of his studies concluded that military unit effectiveness is far more readily conceptualized than measured [Ref. 11]. Part of the problem of measuring military unit effectiveness is operationally defining readiness in a peacetime environment.

Funk referenced Etzioni who noted that organizations attempt to achieve a balanced distribution of resources across needs and did not attempt to maximize satisfaction in one area [Ref. 11]. Funk concluded that military units in peacetime have great difficulty in maximizing effectiveness or readiness because they really face not one objective, but a whole array of competing priorities all calling for their resources. His studies resulted in the proposed conceptual model in Figure 3.4.

This model is referred to as the Unit Performance Systems model. It describes behavior as the interrelationships of technology, formal and informal unit structure, perceived unit requirements and priorities, available resources, unit climate, unit process, cause of evaluation of unit actions, and the unit operating environment [Ref. 11].

3. Hayes et al, Statistical Model of Combat Effectiveness

In 1977, a cross-sectional study for the Defense Advanced Research Projects Agency was conducted. An effort was made to identify through detailed statistical methods key

Figure 3.4. Unit Performance Systems Model
[Ref. 11: p. 38]

factors which contributed to levels of success in 22 combat engagements ranging from World War II to Vietnam. The study was aimed at determining the effectiveness of infantry battalions based on the judgment of experienced Marine Corps officers involved in these engagements. Multi-variate statistical analysis was used to examine the data results. The study revealed that adaptive behavior by units, that is reaction to the combat environment, was the single most important discriminator between successful and unsuccessful performance. They also identified three types of activity which appeared to be closely related to mission accomplishment: command and planning (strongly related), supporting fires (moderately associated), and coordination function (relatively weak and appeared to require effective command and planning before it made a difference) [Ref. 17].

This study defined "combat effectiveness" as

> ...the ability of a unit to accomplish a military mission. As such, combat effectiveness refers to performance in a hostile environment. [Ref. 17: pp. 1-2]

As such the focus on the effectiveness of a military unit is placed on outcomes and effectiveness and can only be measured by mission accomplishment. The infantry battalion was seen as not operating in a vacuum, but rather in a world of obstacles and constraints. Thus the adaptability was an important element in performance. Besides adaptability, Hayes identified a number of key elements which included:

- maneuver during the action
- preparatory air, artillery, and naval gunfire

·communications

·quality of planning and information as well as others. [Ref. 17: pp. 1-18]

This study was done during the period when MCCRES was being developed. One important observation made here with regard to feedback was that, although MCCRES is comprehensive and standardized, a great deal of information is currently passing through the hands of the evaluators that could be extremely valuable to the evaluated units [Ref. 17].

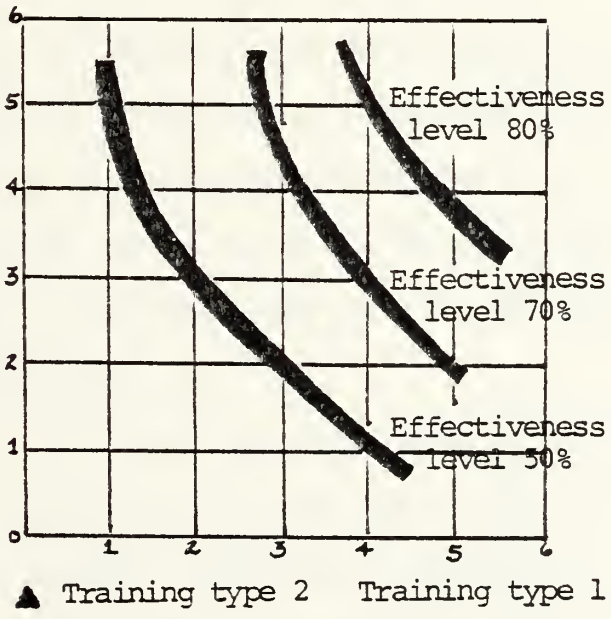
4. Sassone Economic Model of Training Effectiveness

A fourth approach to effectiveness is taken by Sassone, who has taken an economic view which is different from the traditional economic approach to evaluating military training programs. The traditional approach is to evaluate the training on its projected costs and benefits. The Sassone approach requires that any new training program be compared directly with existing programs that it will replace or amplify. Traditionally equipment and training are judged simply on their ability to function for the intended purpose. The training programs are particularly difficult to evaluate because of necessity of measuring the impact of the training on the trainee. In the private sector training programs are generally judged on their effectiveness by the change in lifetime earnings of the trainee after the program [Ref. 39]. If the cost of the training program is less than the lifetime increase in wages, then this program is judged to be economically worthwhile. However, training programs in the military cannot

be judged this same way, because there is no way to measure their contribution toward readiness, sustainability, or effectiveness since these are not commodities or traded in the market place [Ref. 39].

Sassone's methodology requires that when a new type of training for an individual or unit is developed, it must be stated in specific terms to what extent it substitutes for existing programs. The constraint in this case is the training budget for the specific type of training. There are three steps in this methodology [Ref. 39].

(1) An equation relating training inputs and outputs must be developed. This requires a comparison of the two types of training under consideration. (See Figure 3.5.)



Source: Adapted from [Ref. 39: p. 40]

Figure 3.5. A Hypothetical Training Input vs. Output Relationship

The figure shows different levels of effectiveness which can be achieved with various combinations of the two types of training. The curve shows all the levels of effectiveness which can be achieved with the various combinations. The shape of the curves describe the substitute ability of one training type for the other.

(2) Relationship of cost and use data must be obtained. There are three types of costs involved: front end costs for the training program under evaluation; operational costs, and training budgets for the training manager of the program.

(3) The last step requires the development of a relationship between training and effectiveness.

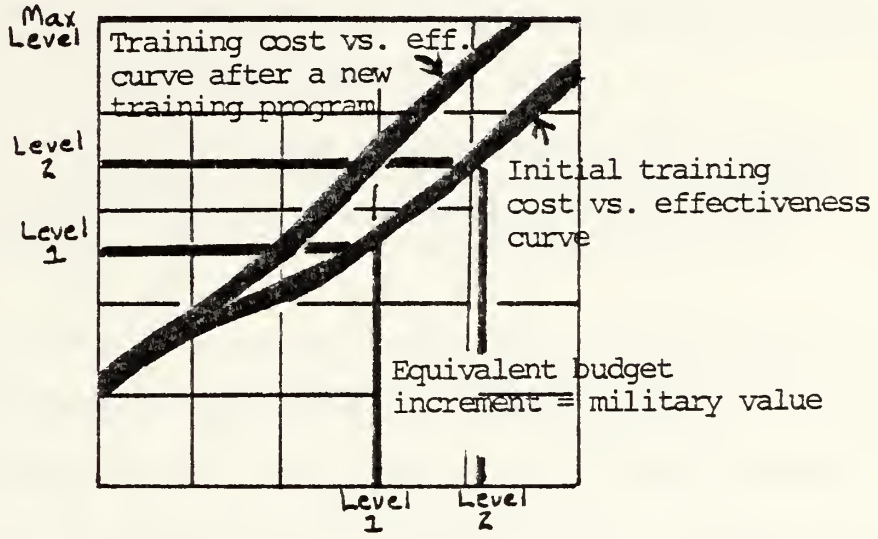
> Where potentially greater effectiveness is available at greater cost, the issue is simply whether the greater effectiveness is worth the greater cost. [Ref. 39: p. 41]

Sassone fails to specify how this relation of training and effectiveness is obtained. It is assumed by this researcher that it refers to some evaluation method such as MCCRES. Measures such as those generalized by ARTEP allow for no relative measure of effectiveness which is required for this type of comparison.

The cost effectiveness equation is then developed by optimum use of available training resources at each level of the training budget. The term "optimum" in Sassone's proposal is one that seems to be in conflict with other theorists. Funk [Ref. 11] for instance indicates that many competing

priorities take resources from the unit thus precluding optimality of resource application.

Figure 3.6 represents a relation between cost and a sample program.



Source: Adapted from [Ref. 39: p. 41]

Figure 3.6. The Military Value of a Training Program

Figure 3.6 is described by Sassone as starting at a minimal level, indicating that some level of effectiveness would exist even without training. The curve initially rises rapidly but starts to level off as maximum effectiveness is reached. As better training programs are conceived, the middle of this curve would shift up. If some new program were a perfect substitute of an existing one, the new curve would overlay the existing one and be exactly the same curve. Various

shifts in the curve up can be caused by a greater level of effectiveness achieved for a lower cost. The Figure 3.6 shows how the military value of various training programs can be compared with other or existing programs. In addition one must consider opportunity costs, funds used for research and development of new programs which the service could otherwise have devoted to existing programs [Ref. 39].

> The military value of the new training program is represented by the increment in the current training budget needed to increase effectiveness by the same amount as the increase in effectiveness associated with the new program. [Ref. 39: p. 42]

The opportunity cost of a new military training program is determined by spreading the front end costs equally over the units trained per year and the expected life time of the program applying the appropriate discount rate. Figure 3.6 is used to compare the military value of a training program by using the cost-effectiveness ratio: if the military value is less than the opportunity cost, then the new program would not be considered economically feasible [Ref. 39].

5. Summary

This section reviewed four approaches to evaluation that have recently been developed for applications to the military. The ARTEP employed [Ref. 38] by the Army provided a process of evaluation which has much in common with MCCRES especially in its application to similar organizations. The conceptual model by Funk [Ref. 11] provided a view not only of the elements involved in training, but also of some of the

barriers and constraints that units must face in a peacetime environment. The results of the Hayes et al., Statistical Model [Ref. 17] were valuable in that specific characteristics were identified that led to success in actual combat engagements. Finally the Sassone, Economic Training Model was presented [Ref. 39] which proposed some new thoughts on the subject of evaluating military training programs. The ideas brought forth in these studies will be of benefit in the future examination of MCCRES.

F. FEEDBACK

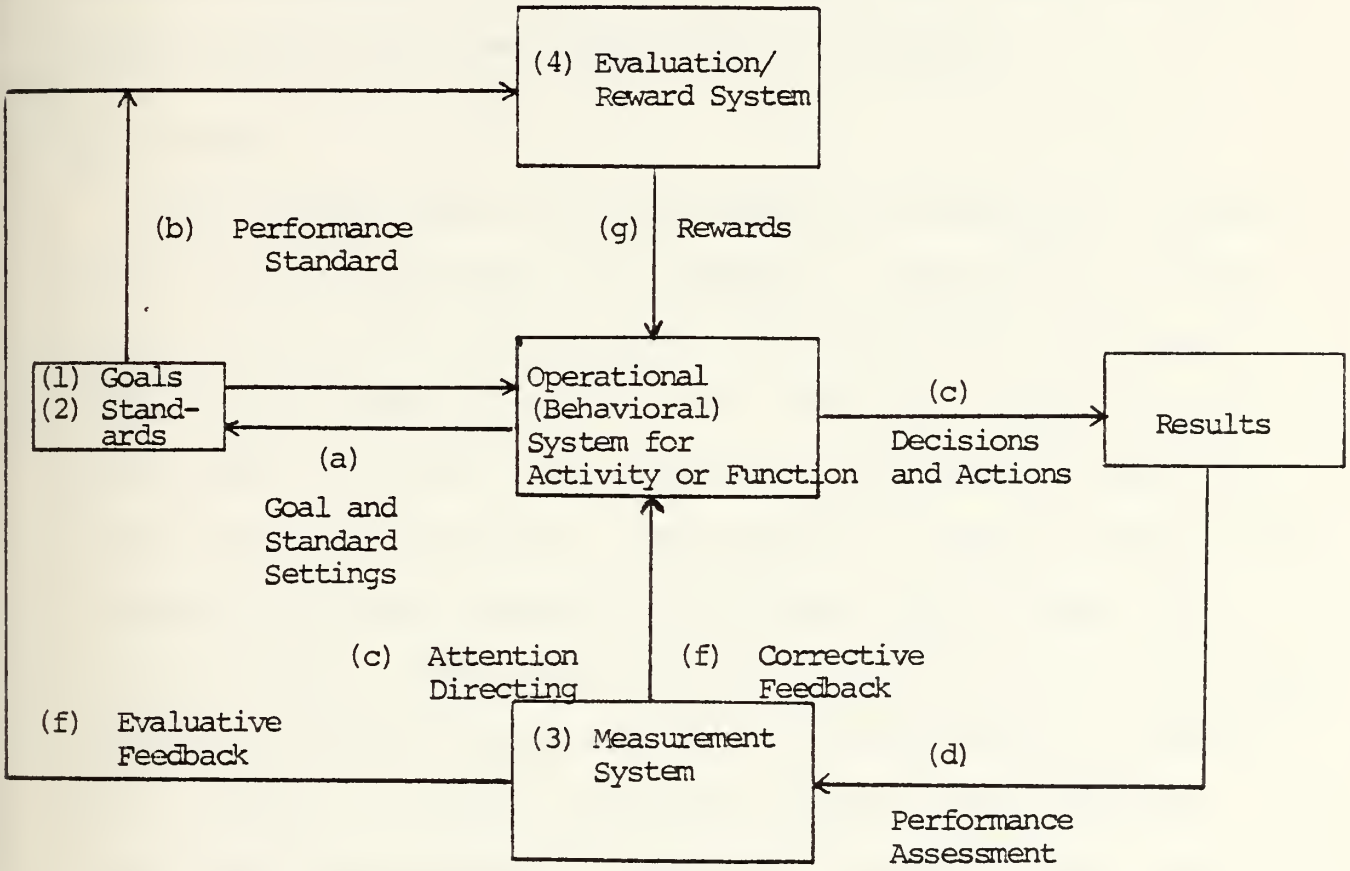
> ...studies have shown that accurate feedback about quality of work is a strong stimulus to good performance...People work better when they know how well they are doing in relation to some meaningful standard. [Ref. 43: p. 174]

This final section of the chapter will discuss feedback. Feedback is variously described by different writers as feedback [Refs. 25,27,36,41], feedback control [Ref. 15], communications [Ref. 32] and further as dissemination, communications, and utilization [Ref. 33].

Whatever the feedback is called it is common to all of the models discussed. Feedback is a necessary part of all evaluation systems.

> Control to be effective, requires timely, accurate, and dependable indicators of effectiveness. Feedback should provide information that is adequate to suggest appropriate action. To that end, reports must point to significant developments, as distinguished from what is normal, usual, and to be expected. [Ref. 30: p. 504]

Flamholtz [Ref. 43] has presented a typical model, Figure 3.7 of an organizational control system which places emphasis on the feedback loop. He describes feedback as a necessary managerial function of the control systems which identifies problems [Ref. 43].



Source: Adopted from [Ref. 43: p. 56]

Figure 3.7. Model of Organizational Control System

This model provides a typical example of how the essential feedback loop functions in an organizational control or evaluation system. The feedback loop provides an interactive

process that allows for routine recycling of the results as a comparison of the observed performance to the measurement system. The essential element to observe here is that feedback is a standard fixture of the evaluation system. All systems viewed that provide a diagrammatic model include a feedback mechanism. In addition Anderson and Ball and the ARTEP provided detailed structures for feedback.

G. SUMMARY

This chapter has covered the topics of management, management control, evaluation, and feedback. These topics can be seen as moving from the general to the specific. The boundaries between these topics are not clear cut. There is a great deal of overlap in the fields of management, organizational control, evaluation, and feedback. This is particularly true when they are viewed from different disciplines. For instance, much of what is classified in education as evaluation, would be classified under control in organizational or managerial theory. A similar situation exists with regard to terminology for feedback. Theorists in both the same and different disciplines often use various terms to describe feedback.

Since MCCRES attempts to measure or quantify readiness, the military models were included. Although the last three are static measures or prediction of effectiveness as opposed to MCCRES and ARTEP which are dynamic measures, they do provide insight into the various views of effectiveness and the observations made from several different disciplines.

Feedback was discussed with emphasis on relating the many different terms used to describe feedback. In addition the feedback loop which is common to all models reviewed has been discussed. The theory of feedback is essential to this study and the many ideas and structures placed on it will give much insight when applied to MCCRES. Certain elements such as: brevity and clarity, timeliness, interim products and reports, and responsiveness [Ref. 33] have almost universal application to feedback theory. The MBO, Evaluation and Authority, Critical Incident, and ARTEP all provide a wealth of insight on how feedback techniques should be applied.

The next chapter will provide a detailed overview of the MCCRES System.

IV. MCCRES

In the last chapter detailed examination was made of management control, four general evaluation systems, and four specific evaluation systems which apply to the military. This should provide the reader with a background from which to view MCCRES. In this chapter attention is given in detail to the MCCRES itself, its development, explanation of the system's mission performance standards, and the evaluation process applied by MCCRES as well as the reports and feedback designed into the current system. The goal of this chapter is to provide the reader with a general understanding of how the MCCRES is applied, based on the most current Marine Corps directives.

> The purpose of the Marine Corps Combat Readiness Evaluation System (MCCRES) is to provide a timely and accurate evaluation of readiness of Fleet Marine Forces, including reserve units, to accomplish assigned missions. [Ref. 1: p. 1-A-1]

The formal MCCRES must be given at least once every two years for all FMF units for which performance standards have been written.

A. DEVELOPMENT AND STRUCTURE

The development of the MCCRES was begun with a review of the various combat readiness measurements then currently in use. Many of these consisted of individual, as well as unit, evaluations and were in the form of inspections which stressed appearance more than combat proficiency [Ref. 1].

The MCCRES was structured to access the ability of all Marine Corps Combat units: air and ground combat, combat support, and combat service support. Specifically it was designed to provide:

-Performance standards based on assigned missions

-A standardized evaluation process

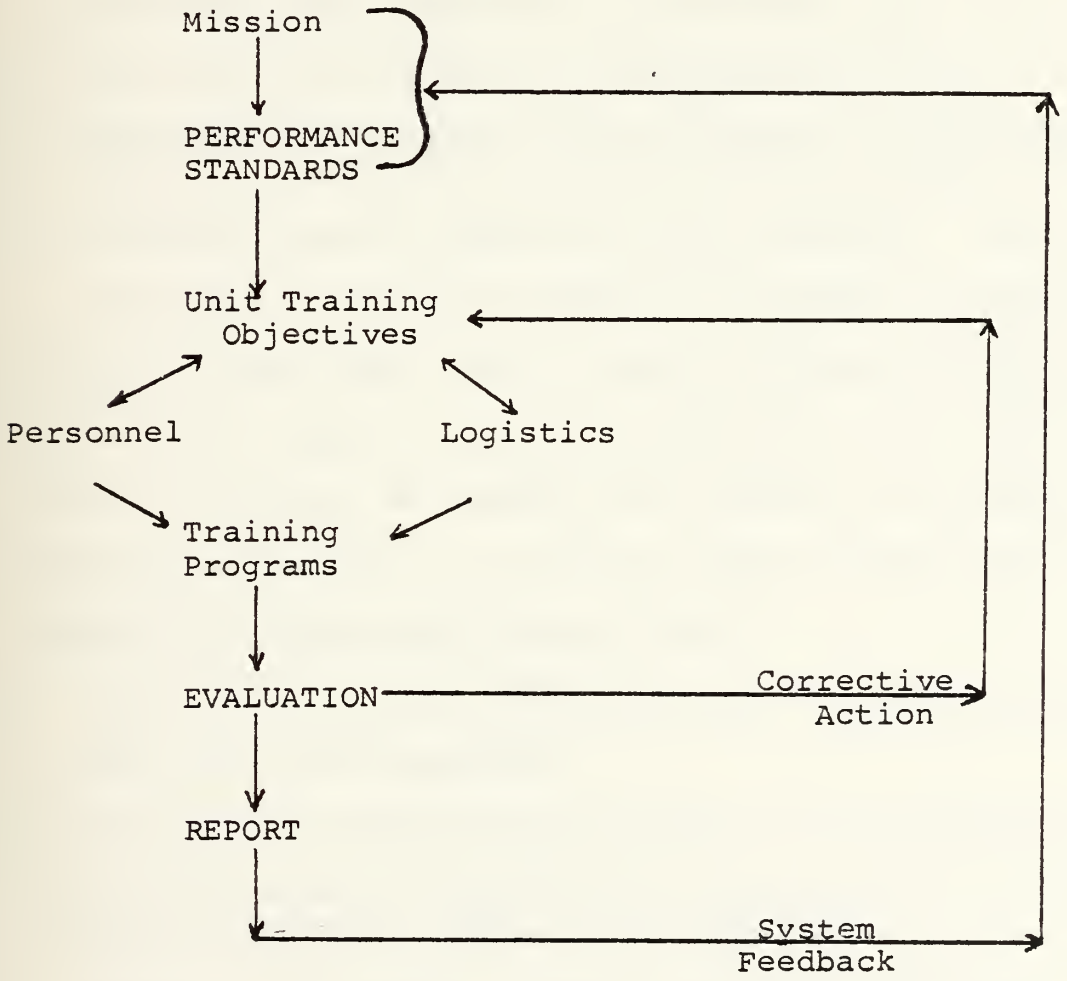
-A standardized reporting system

-Feedback to units indicating strengths and weaknesses. [Ref. 1: p. 1-A-2]

The MCCRES was designed to provide a detailed analysis of the units' operational capabilities and to specifically identify strengths and weaknesses through comparison with doctrine under simulated combat conditions. The doctrine is embodied in a checklist of requirements. The hierarchy of these qualities is identified from general to specific as Mission Performance Standards (MPS), each of which consists of three parts: Tasks, Conditions, and Requirements. The MPS set the Commandant's acceptable standards for tactical performance throughout the Marine Corps. Based on comparison of the unit's performance to the MPS under simulated conditions, a determination is made of "Combat Ready/Not Combat Ready." The MCCRES is designed for both formal and informal evaluation. The informal evaluation can be provided by the unit itself measuring its performance standards. The formal evaluation is accomplished by higher-level commands normally evaluating a selection of MPS. For the formal evaluation certain MPS are required in all evaluations and others are selected by the

organization directing the evaluation based on detailed guidance in Ref. 1. A cross section of MPS's are used to provide a statement of the organization's operational readiness.

The evaluators employed in the formal system must be experienced, capable personnel. The overall system is designed to identify specific operational deficiencies and the nature of any latent or potential problems. The MCCRES cycle is described in Figure 4-1.



Source: Adopted from [Ref. 1: p. I-A-6]

Figure 4.1. MCCRES Cycle

B. MISSION PERFORMANCE STANDARDS (MPS)

In building the MCCRES framework it was decided that the evaluation would be structured around a set of Mission Performance Standards that establish, on a Marine Corps-wide basis, acceptable operational performance. Derivation of these standards was accomplished by using five interrelated concepts concerning determination of combat readiness. The concepts are:

- Standards must be objective
- Standards must define for the evaluator what quality means
- Standards must be based on published doctrine
- Standards must involve the performance of individual Marines in evaluation of unit combat readiness
- Standards must be simple for the evaluator. [Ref. 1]

The MPS are defined in detail in Volumes II through VIII of Marine Corps Order 3501.2. Each of these volumes pertains to a specific type of unit to be evaluated, for instance Volume II pertains to Infantry and Volume III to Rotary Wing Observation Squadrons. In this way the volume lists the MPS's involved for each unique type of unit.

Each MPS is further broken down into three major parts:

-"The Task to be performed

-The Condition under which the task is to be performed

-The Requirements which must be accomplished to successfully fulfill the task." [Ref. 1: p. I-B4]

Examples of the MPS, Tasks, Conditions, and Requirements are provided in Figure 4.2.

MISSION PERFORMANCE STANDARD 2B.3--MOVEMENT TO CONTACT

TASKS	CONDITIONS	REQUIREMENTS	Y	N	COMMENTS
2B.3.1 PREPARATION	Operation order is provided directing a tactical movement to area of anticipated contact with enemy. Route selection is a tactical decision of unit commander. Minimum preparation time for proper evaluation of this task is three hours after delivery of the order to the unit.	2B.3.1.1--Receipt of order acknowledged to higher hq. 2B.3.1.2--Warning order issued to all subordinate units within 30 minutes (KI). 2B.3.1.3--Staff coordination IAW FMFM3-1; Emphasis: Intelligence collection, fire support planning, and security (KI). (Key Indicator) 2B.3.1.4--All echelons prepare for move; inspect materiel, pack equipment, and identify specialized requirements. 2B.3.1.5--Weapons test fired if situation permits. 2B.3.1.6--Communications checks completed and communication security materials issued. 2B.3.1.7--Movement plan formulated (KI). 2B.3.1.8--Movement order issued (KI). 2B.3.1.9--Readiness for movement reported to higher hq.			

Source: Adopted from [Ref. 1: p. 1-B-5]

Figure 4.2. Sample of Mission Performance Standards

To assist the Evaluator when the Requirement does not completely define the quality of performance necessary, Key Indicators (KI) are provided. These KI's are defined to clarify and explain the requirements [Ref. 1]. The Key Indicator (KI) is further defined in Figure 4.3, Key Indicators for Evaluator.

For simplicity and to reduce the need for subjective judgments, all MPS's were designed to permit the Evaluator only three possible outcomes for each requirement: Yes/No/Not Applicable. Those MPS's dealing with the performance of individual Marines, Exercise of Command and Control, and Fire Support Coordination must be used during every evaluation. The reason that all MPS's are not employed during each evaluation is a limitation of time and resources [Ref. 1].

In addition to the evaluation of MPS's which use a simulated combat environment against an aggressor force, a series of MCCRES Standard Performance Tests (SPT) have also been developed. Examples of these types of proficiency tests are: Foot Mobility Test, Dragon Gunner's Test, Engineer Route Reconnaissance Test, and Aircraft Recognition Test. The SPT's are used to support the MPS's and are tested objectively prior to the MCCRES operational/readiness test. The SPT is formated exactly as the MPS; however, a 'Yes' must be achieved in each area before the MCCRES is continued. Any unit not found proficient in the SPT portion of MCCRES will not be tested on the tactical portion.

KEY INDICATORS FOR EVALUATOR

WARNING ORDER

MUST INCLUDE:

General information on the situation.

Units to make the move and anticipated sequence.

Anticipated time of move.

Anticipated route and destination.

STAFF COORDINATION

MUST SPECIFICALLY ADDRESS:

Route reconnaissance--map, physical, or aerial photo.

Support needed from higher hq--air, vehicle, or firepower.

Fire support coverage throughout movement.

Cover and concealment available enroute.

Logistic aspects affected by location change.

BASIC PLAN

MUST BE BASED ON:

Movement at speed desired by higher hq.

Control of all elements during move.

Security of all movement serials.

Known enemy capabilities.

MOVEMENT ORDER

MUST CONTAIN:

Clearly stated mission.

Definition of all control measures to be used: check points, phase lines, march objectives, etc.

Specific missions for attached and/or support elements: tanks, engineers, TOW, etc.

Identification of initial point from which move will begin.

Assignment to march serials.

Time of departure.

Clear identification of available outside support.

Detailed security procedures.

As much information on threat as is available:
Emphasis on specialized weaponry that can affect the move; ATGM, artillery, air, etc.

Source: Adopted from [Ref. 1.P: p. I-B-6]

Figure 4.3. Sample of Key Indicators for Evaluator

C. PERSONNEL ASSIGNMENT FOR THE EVALUATION

The key to successful application of each MCCRES is the evaluation process. Selection and training of evaluators is at the very heart of the evaluation process. Credibility of the evaluators is essential to the success of MCCRES. The evaluators selected are to have the requisite skills and recent experience as to preclude the need for a long, detailed school for the evaluators. However, as needed and as time allows, training is provided to evaluators. Since all evluation systems require some judgment on the part of the evaluators, and MCCRES is no exception, sound judgment is a prerequisite for each evaluator chosen.

The evaluation is structured with the Commanding General's Fleet Marine Force Pacific (FMFPAC) and Fleet Marine Force Atlantic (FMFLANT) as the Evaluation/Exercise Commander(s) (EC) for the initiation and conduct of all formal MCCRES Evaluations. The responsibilities of the Evaluation/Exercise Commanders are outlined in detail in Ref. 1.

1. Evaluation/Exercise Director (ED)

ED will be designated by the Exercise Commander (EC) and is responsible to prepare for, conduct, and report the formal MCCRES evaluations. Normally the Commanging General of the respective Marine Division or Wing whose subunit is to be evaluated is designated ED.

2. Tactical Exercise Controller (TEC)

TEC will be designated by the ED, along with an appointed staff, to serve as the control agency for conducting

the exercise. The TEC compiles and analyzes the results of the evaluation. The TEC is also responsible for the detailed training of the evaluators as well as development of a detailed exercise scenario. At the end of the evaluation a formal report is prepared for the ED describing the combat readiness of the evaluated unit. A detailed critique should also be conducted for all involved in the evaluation. In the critique the results of the evaluated MPS are to be highlighted with respective strengths and weaknesses.

3. Evaluators

Evaluators should be prepared for the role through successful past professional experiences as well as through any detailed school provided. The MCCRES evaluators have three roles: exercise controller, umpire, and performance evaluator. As a performance evaluator, they apply the detailed MPS's contained in the appropriate volume for the unit and they are evaluating and actually make the 'Yes/No/Not Applicable' determinations for individual tasks. The evaluators must possess a complete and thorough understanding of the Mission Performance Standards being evaluated. The evaluators must make any notes needed on an Evaluator Work Sheet that are necessary to support judgment during the process [Ref. 1].

4. Senior Evaluator

Senior Evaluators will be determined by rank. Evaluator for the unit evaluated compiles the data sheets from all evaluators and should conduct a post exercise wrap up. Any

questions or conflicts should be resolved at that time. The process must result in the senior evaluator being assured that his data provides an accurate reflection of the overall unit performance. The senior evaluator then makes the determination of the overall unit evaluation of "Combat Ready/Not Combat Ready". The senior evaluator provides the data sheets to TEC who compiles the detailed analysis and presents it to the evaluation/exercise director [Ref. 1].

5. Evaluation Staffing

Evaluation Staffing is the responsibility of the ED for both selecting and training all evaluators prior to a MCCRES. It is desirable to obtain evaluators from adjacent commands, not directly related to the organization being evaluated.

D. COMPUTER ADAPTED MCCRES

The Marine Corps Combat Readiness System Software Application (MCCRESSA), is designed to furnish all organizations involved with MCCRES a means of assessing and analyzing data pertaining to MCCRES evaluations. Specifically it provides the following:

A list of mission performance standards, tasks, and requirements.

...the chief evaluator with a rapid overview and selected analysis of the units evaluation.

Identifies unit readiness based upon mission performance standards tested within the applied scenario.

Provides unit commanders a list of unit readiness deficiencies to initiate corrective action or obtain higher command level assistance.

Reviews unit evaluations to determine validity of mission performance standards and doctrine.

Reviews unit's evaluations to determine limitation/inadequacies in officer education programs. [Ref. 1: p. I-E2]

All of the formal evaluation reports are input to the Headquarters Marine Corps data base [Ref. 1].

E. REPORTS

At the end of a MCCRES, after the Evaluator Data Sheets have been compiled for all units evaluated, the TEC and senior evaluators should review the sheets and make a determination of "Combat Ready/Not Combat Ready" for each unit evaluated. This recommendation is based on an initial review of "Yes's/No's" for all requirements, taking into account any tasks or MPS's that were "demand elements that must be judged Yes for an overall 'Combat Ready' evaluation to be given."

1. Feedback

"The primary purpose of MCCRES reports is to provide the feedback necessary for commanders to initiate corrective action that will improve combat readiness" [Ref. 1: p. 1-D1].

The results should be reflected in improved training objectives and may also affect resource allocation of personnel, equipment, or logistics support. To assist in the reallocation of critical resources, a detailed report is provided through the chain of command to the unit evaluated. This report provides a short subjective comment as well as percentile scores and weighting for each Section, MPS, Task,

and Requirement evaluated. (See Appendix A--Sample MCCRESSA printout for one MPS.)

Additionally a report is provided in message format to the Commandant of the Marine Corps (CMC) within 10 days following the end of an evaluation indicating the overall evaluation "Combat Ready/Not Combat Ready" and unit identification. Within 30 days a detailed report of the MCCRESSA printout is provided to the CMC. The report should include comments or recommendations for improvement or revisions to the MCCRES. The purpose of the follow up report is to allow CMC to: provide assistance in the review of doctrine, tactics, techniques, education and training programs, and validation of MCCRES elements. This report also serves to highlight trends and repeated deficiencies, and permit analysis for corrective action to take place [Ref. 1].

2. Policy

Based on Marine Corps policy, MCCRES reports are not designed to be used to compare the combat readiness of various units. This is a result of differences in unit type, services, environmental conditions, and resource allocations. The evaluation indexes on MCCRES reports are provided to indicate an approximate status of the unit's combat readiness during a particular evaluation [Ref. 1]. It can be said that the MCCRES provides a snap shot of the unit at the time of the evaluation.

F. SUMMARY

This chapter presented an overview of the MCCRES including a discussion of the Development and Structure, Mission Performance Standards, Personnel Assignment for the Evaluation, Computer Adapted MCCRES and Reports. The purpose was to provide the reader with a general background of how the MCCRES is intended to be implemented throughout the Marine Corps, based on systems design and policies.

V. METHOD OF ANALYSIS

The research method used had three distinct phases. First a general literature review was conducted. Second a specific literature review of MCCRES and related defense publications was undertaken. Third a detailed field study was made to obtain first hand information from those involved with the development, application, and oversite of MCCRES.

A. AUDIENCE

Anderson and Ball specified in their findings [Ref. 36] of the importance of identifying the audience when researching and distributing results. To this end the primary audience for this study are the planners who conduct periodic reviews and revisions of MCCRES doctrine, that is, the Readiness Branch at HQMC. Additionally the audience should include all those involved with MCCRES or who will be involved with MCCRES, as well as commanders, evaluators, planners in organizations and others who would benefit from understanding the findings presented herein.

B. GENERAL LITERATURE REVIEW

The results of the general literature review are presented in Chapter III. A background in management control, general evaluation systems as well as specific examples applied to the military from various disciplines is necessary to gain

insights into MCCRES. It is evident from Chapter IV that MCCRES has incorporated into it many of the positive aspects of general evaluation systems theory [Refs. 5,6,20,25,26, 32,33].

C. SPECIFIC LITERATURE REVIEW

The specific literature review consisted of articles on MCCRES appearing in the various defense publications [Refs. 2, 6,10,13,31,37, and 38] as well as the technical reports and articles available on MCCRES and other military training and readiness evaluation systems [Refs. 4,7,11,12,17,38]. This specific literature review not only provided a basis for understanding the MCCRES from the standpoint of its proponents and detractors, but it also provided some valuable ideas on alternatives to MCCRES. The detailed technical reports made available by George Washington University were invaluable in understanding the background and initial development of the MCCRES [Refs. 3,4,10].

D. FIELD STUDY

The field study was conducted to obtain first hand information on MCCRES. Personal interviews, telephone interviews, and a visit to the Readiness Branch HQMC, George Washington University, and to the Army's 7th Infantry Division were employed to that end. The interviews were semi-structured. The stated purpose of the interviews was not just to answer the specific questions posed, but to stimulate thought and identify

as many ideas as possible on how the MCCRES could be improved. Although the scope of this project was limited by its primary emphasis on feedback, other valuable information was elicited.

1. Sample

The sample group chosen consisted of those who had the most experience and most vested interest in the MCCRES feedback. Because the MCCRES evaluations are most often given to infantry battalions and aviation squadrons, these were identified as the primary target group. Battalion and squadron commanders, senior evaluators, and division/squadron MCCRES officers were identified as the primary sources of information since they have the most detailed involvement with the MCCRES feedback. Upon interviewing the sample it was also found that many of the officers had been involved in several MCCRES's and in different capacities. Thus many had experience as both a senior evaluator and a battalion or squadron commander of an evaluated unit. Divisional or squadron MCCRES officers were also a rich source of information because of their daily involvement with MCCRES. The secondary source of information were "others involved with MCCRES." This group is composed of members of evaluated units other than the unit commanders, such as unit operations officer, officers involved with subunits evaluated, and company commanders. They also provided much information.

Given the sample identified, the field study, therefore, concentrated on those of rank from captain to colonel

in the military occupational fields of infantry, aviation (fixed wing and helicopters), tanks, artillery, engineer, and air control. A total of 37 individuals were interviewed. The sample group is presented by rank and occupational field below in Table 5.1.

TABLE 5.1

Rank/Occupational Field Sample Distribution

RANK \ OCCUP FIELD	Infantry	Fixed Wing Air	Helicopter	Tanks	Artillery	Engineer	Air Control	TOTAL
Colonel	3	1	0	0	0	0	0	4
Lt. Colonel	10	3	3	0	1	1	1	19
Major	3	4	3	1	0	0	0	11
Captain	2	0	0	1	0	0	0	3
TOTAL:	18	8	6	2	1	1	1	37

These officers are currently serving in billets throughout the Marine Corps, representing all divisions and wings, as well as the 1st Marine Brigade in Hawaii. Other active duty officers serving in billets at Headquarters Marine Corps, Naval Postgraduate School, and with the reserve establishment were also interviewed.

2. Interview Techniques

All those interviewed were asked a standard set of open-ended questions [Ref. 45]. These questions were

purposefully left broad and open-ended to solicit as many ideas and opinions as possible. Each interview was conducted in person or by telephone by this researcher. All interview results were recorded on an answer form and interviewers were taped after the permission of the respondent was given. When a respondent was uncertain or uncomfortable in answering a question, he was asked to skip over it. However, no attempt was made to limit the respondent to any set of prearranged answers. In all cases, where answer choices were posed, an invitation for "other ideas or suggestions" was always made. As the interviews progressed, the questions were refined to help the interviewee narrow in on the specific area being researched.

3. Questions Posed

The following set of questions was posed to all those interviewed:

(1) When the computerized data results from a MCCRES are provided to the evaluated unit, what uses are made of that data?

(2) Do you feel that information/data provided to the evaluated unit as the result of a MCCRES are satisfactory for the purpose of initiating corrective action that will improve combat readiness?

(3) Is the current procedure of providing the results as a computer printout based on the evaluation of the Sections, MPS, Tasks, and Requirements the most

effective format for displaying the results to the evaluated unit commander?

(4) Does the format lend itself to a complete understanding of how the unit performed compared with MCCRES criteria?

(5) Do Marine Corps Directives provide sufficient guidance for interpretation of results?

(6) Would it be helpful to know how your unit performed on a Section/MPS/Task/Requirement as compared with other units? Example: Your infantry battalion scored a 73% on the MPS, "Command and Control Operations." This compares with a median of 68% for all other infantry units and 71% for all units evaluated.

(7) What do you feel is the most effective forum for providing MCCRES results to the unit tested?

a. Oral debrief at end of exercise

b. Written debrief at end of exercise

c. Progressive oral debrief throughout the exercise

d. Combination of a-c above

e. Some other method than those suggested

(8) Who should be made aware of the MCCRES results?

a. Chain of command

b. Other like-units (infantry, air, artillery, etc.)

c. All Marine Corps units

4. Background Visits

Additionally visits were made to Headquarters Marine Corps (HQMC), Readiness Branch, George Washington University

and to the Army's 7th Infantry Division, Fort Ord, California. Individuals interviewed during these visits provided many valuable insights into the development and overseeing of MCCRES, as well as a detailed understanding of how the Army ARTEP system is employed. Several of the individuals interviewed were involved in the early development of the MCCRES: Professor W. H. Marlowe, George Washington University; Lt. Colonel Paul Catalone, USMC, and Colonel M. P. Sullivan, USMC (telephone interview), and Lt. Colonel R. S. Gibson, USMC (telephone interview).

E. CONTENT ANALYSIS/DATA REVIEW

Since the material/responses to the questions asked were subjective in nature, content analysis was used to analyze the results [Ref. 46].

1. Content Analysis Defined

Berelson states: "Systematic content analysis attempts to define casual descriptions of the content, so as to show objectively the nature and relative strength of the stimuli applied to the reader or listener" [Ref. 46: p. 14].

This procedure is employed by constructing an analysis outline which described by Cartwright embodies the following general principles:

Step 1--specify data needs,

Step 2--map out plans for tabulation,

Step 3--map a skeleton of the outline,

Step 4--fill in categories for each variable,

Step 5--establish procedures for using the material,

Step 6--try out the analysis outline and use procedure. [Ref. 45: pp. 454-460]

The application of content analysis allows the researcher to study the communications and focus on the interaction through messages which link communicating parties. Not all significance can be extracted by inspection or mere observation. The real purpose of any analysis is to illuminate and make inferences about something that is not otherwise apparent. Thus the process of content analysis is a process like the congruence definition of evaluation which employs objectives and criteria in developing a measurement process which is both scientific and objective. The process is not, however, totally devoid of judgment and does allow the researcher discretion in categorizing results [Ref. 47].

2. Analysis of Specific Responses to Questions

The purpose of content analysis is to provide some means of quantifying subjective information. To accomplish this rules must be established. The data contained in the response to each of the eight questions was treated as a separate unit and no attempt was made during the interview to relate any answers from one question to that of another. This procedure was used to solicit as much information possible and so as not to limit any of the respondents in their comments. Since each question stood alone and was relatively subjective in nature, each question provided an opportunity for a response to contain similar information in response to different

questions. Thus once a respondent began to provide information to a question which was more appropriately categorized as a response to a different question, the interviewer simply recorded the information under the question currently being asked. However as part of the analysis of the interviews, responses to one question that were relevant to other questions were considered.

Each question had certain categories set up for the responses and each response made was placed in one of these categories. In order to generate useful information from content analysis, the categories must be collectively exhaustive and mutually exclusive. For example:

Question #1--When the computerized data results from a MCCRES are provided to the evaluated unit, what uses are made of that data?

Responses to this question fell into three groupings:

"none"

"used for planning future training and resource allocation"

"historical reference only"

It should be understood that each MCCRES has many key participants and each has a different involvement in the evaluation. Some such as the unit commander and senior evaluator are involved virtually in all aspects. Others such as the operations officers and operations evaluators have a more limited focus in their responsibilities. Thus a system was developed to give varying weight to those who had differing levels of involvement with MCCRES.

A scoring system was established with the following weighting:

Intensity	Points
High	3
Medium	2
Low	1

High Intensity--those involved directly in one or more MCCRES as unit commander, division or wing MCCRES officer, senior evaluator.

Medium Intensity--those involved with less direct responsibility for results: operations officers, other evaluators, company commanders, etc.

Low Intensity--Employed in only one case where interviewee was involved in a forerunner evaluation to MCCRES

3. Analysis of General Responses to Questions

To determine which question responses should be displayed for the reader, a 10% rule was formulated. If 10% or more of the respondents to a question amplified their specific answer with similar comments or suggestions, then the comments were included. Thus, any of the general responses included in the next chapter were mentioned by four or more of those sampled.

F. SUMMARY

In this chapter the research method is summarized. A total of 37 Marine officers were interviewed. Although the number is relatively small, it should be remembered that the Marine Corps has three infantry divisions and three aircraft

wings on active duty. Therefore, the total population of those qualified to answer the questions is drawn from a limited population of officers in the target group. It is hard to estimate the total number of officers that have been involved in these primary capacities since the billet holders rotate regularly; but it is safe to say that only a few hundred officers have served as battalion/squadron commanders or senior evaluators of evaluated units. Since the MCCRES is only required to be given every two years, the sample used appears to be reasonable.

VI. RESULTS

This chapter presents the detailed analysis of the results obtained through the field study. The specific and general responses to questions posed were content analyzed. The basis for this type of analysis is provided by Berelson [Ref. 46].

Percentages derived from the content analysis are the weighted averages of the points for each category as compared with total points for each question. The responses are weighted based upon the level of involvement of the respondent in previous MCCRES's. In cases where some interviewees did not answer a certain question, the percentage is based only on the results of those who did answer. No attempt was made to categorize reasons why those that failed to respond did so.

A. ANALYSIS OF SPECIFIC RESPONSES TO QUESTIONS

First Question: (1) When the computerized data results from a MCCRES are provided to the evaluated unit, what uses are made of that data?

Responses to this question were grouped into three categories--None, Used for planning, and Historical reference only--and are shown in Table 6.1. The majority of the respondents (63.6%) said that the results of MCCRES were used for planning future training or specifically for future resource allocation.

Second Questions: (2) Do you feel that information/data provided to the evaluated unit as a result of MCCRES is

TABLE 6.1

Results of Question One

RESPONSE	INTENSITY						PERCENTAGES
	High		Medium		Low		
	# of Respondents	Weighted Score	# of Respondents	Weighted Score	# of Respondents	Weighted Score	
a. "None"	4	(12)	1	(2)	0	(0)	15.9
b. "Used for Planning"	12	(36)	10	(20)	0	(0)	63.6
c. "Historical Reference Only"	4	(12)	3	(6)	0	(0)	20.5
TOTAL:		(60)		(28)		(0)	(88) 100.0

Number Responding: 34 Response Rate: $34/37 \times 100\% = \underline{91.9\%}$

satisfactory for the purpose of initiating corrective action that will improve combat readiness?

The responses to this question are categorized as positive or negative and are shown in Table 6.2. The majority of the respondents (81.3%) said that the information/data provided from a MCCRES is satisfactory for initiating corrective action that will improve combat readiness.

Third Question: (3) Is the current procedure of providing the results as a computer printout based on the results of Sections, MPS, Tasks, and Requirements, the most effective format for displaying the results to the evaluated unit?

The responses to this question were categorized as positive or negative. As shown by Table 6.3, 64.6% of the respondents said that the current procedure of providing the results as a computer printout was not the most effective format for displaying the results to the evaluated unit.

Fourth Question: (4) Does the format lend itself to a complete understanding of how the unit performed compared with MCCRES criteria?

The response to this question was categorized as positive or negative. As shown in Table 6.4, 55.6% of the respondents said that the current format lends itself to a complete understanding of how the unit compared with MCCRES criteria.

Fifth Question: (5) Do Marine Corps Directives provide sufficient guidance for interpretation of results?

The responses to this question were categorized as positive or negative. As shown by Table 6.5, 72.9% of the

TABLE 6.2

Results of Question Two

RESPONSE	INTENSITY						PERCENTAGES
	High		Medium		Low		
	# of Respondents	Weighted Score	# of Respondents	Weighted Score	# of Respondents	Weighted Score	
a. Positive	16	(48)	13	(26)	0	(0)	81.3
b. Negative	5	(15)	1	(2)	0	(0)	18.7
TOTAL:		(63)		(28)		(0)	(91) 100.0

Number Responding: 35 Response Rate: 94.5%

TABLE 6.3

Results of Question Three

RESPONSE	INTENSITY						PERCENTAGES
	High		Medium		Low		
	# of Respondents	Weighted Score	# of Respondents	Weighted Score	# of Respondents	Weighted Score	
a. Positive	6	(18)	5	(10)	0	(0)	35.4
b. Negative	13	(39)	6	(12)	0	(0)	64.6
TOTAL:		(57)		(22)		(0) (79)	100.0

Number Responding: 30 Response Rate: 81.1%

TABLE 6.4

Results of Question Four

RESPONSE	INTENSITY						PERCENTAGES
	High		Medium		Low		
	# of Respondents	Weighted Score	# of Respondents	Weighted Score	# of Respondents	Weighted Score	
a. Positive	10	(30)	5	(10)	0	(0)	55.6
b. Negative	8	(24)	4	(8)	0	(0)	44.4
TOTAL:		(54)		(18)		(0) (72)	100.0

Number Responding: 27 Response Rate: 73.0%

TABLE 6.5

Results of Question Five

RESPONSE	INTENSITY						PERCENTAGES
	High		Medium		Low		
	# of Respondents	Weighted Score	# of Respondents	Weighted Score	# of Respondents	Weighted Score	
a. Positive	11	(33)	9	(18)	0	(0)	72.9
b. Negative	5	(15)	2	(4)	0	(0)	27.1
TOTAL:		(48)		(22)		(0) (70)	100.0

Number Responding: 27 Response Rate: 73.0%

respondents said that Marine Corps Directives provide sufficient guidance for interpretation of results.

Sixth Question: (6) Would it be helpful to know how your unit performed on a Section/MPS/Task/Requirement as compared with other units? Example: Your infantry battalion scored a 73% on the MPS, "Command and Control Operations." This compares with a median of 68% for all other infantry units and 71% for all units tested.

The responses to this question were categorized as positive or negative. As shown by Table 6.6, 55.4% of the respondents said that it would be helpful to know how their unit performed on a Section/MPS/Task/Requirement as compared with other units.

Seventh Question: (7) What do you feel is the most effective forum for providing MCCRES results to the unit?

This question was evaluated based on selection of one of five responses: oral debrief at end of exercise, written at end, progressive; combination of above; or other. As indicated in Table 6.7, all thirty-seven interviewees responded to the question. Of the total, 91.5% responded that a combination of oral and written debriefs is the most effective forum for providing MCCRES results to the unit evaluated.

Eighth Question: (8) Who should be made aware of MCCRES results?

The question was evaluated based on selection of one of three responses: chain of command, other like units, or all units. As indicated in Table 6.8, 60.2% of the respondents indicated that all units should be made aware of MCCRES results.

TABLE 6.6

Results of Question Six

RESPONSE	INTENSITY						PERCENTAGES	
	High		Medium		Low			
	# of Respondents/Score	Weighted Score	# of Respondents/Score	Weighted Score	# of Respondents/Score	Weighted Score		
a. Positive	10	(30)	10	(20)	1	(1)		55.4
b. Negative	11	(33)	4	(8)	0	(0)		44.6
TOTAL:		(63)		(28)		(1)	(92)	100.0

Number Responding: 36 Response Rate: 97.3%

TABLE 6.7

Results of Question Seven

RESPONSE		INTENSITY						PERCENTAGES
		High		Medium		Low		
		# of Respondents/Score	Weighted Score	# of Respondents/Score	Weighted Score	# of Respondents/Score	Weighted Score	
a.	"oral debrief at end of exercise"	0	(0)	0	(0)	0	(0)	0
b.	"written at end"	0	(0)	1	(2)	0	(0)	2.1
c.	"progressive"	2	(6)	0	(0)	0	(0)	6.4
d.	"combination of above"	18	(54)	15	(30)	1	(0)	91.5
e.	"other"	0	(0)	0	(0)	0	(0)	0
	TOTAL:		(60)		(32)		(0)	(93) 100.0

Number Responding: 37 Response Rate: 100%

TABLE 6.8

Results of Question Eight

RESPONSE	INTENSITY						PERCENTAGES
	High		Medium		Low		
	# of Respondents/Score	Weighted Score	# of Respondents/Score	Weighted Score	# of Respondents/Score	Weighted Score	
a. "chain of command"	5	(15)	6	(12)	0	(0)	30.7
b. "other like units"	1	(2)	3	(6)	0	(0)	9.1
c. "all units"	11	(33)	10	(20)	0	(0)	60.2
TOTAL:		(50)		(38)		(0) (88)	100.0

Number Responding: 36 Response Rate: 97.3%

The responses to the questions are summarized for the reader in Tables 6.9 and 6.10. Table 6.9 shows the distribution by rank of the specific responses to the eight questions. Table 6.10 shows the distribution by community (ground/air). A more detailed display of data by occupational specialty was available to the researcher; however, to protect the anonymity of the respondents only the general categorizations of answers is displayed. In reviewing the data in Tables 6.9 and 6.10 there is no direct evidence of bias by any specific rank or community. This same result was true when evaluating the data by occupational specialty.

B. ANALYSIS OF GENERAL RESPONSES TO QUESTIONS

The primary purpose of this research was to gain insight and new ideas. To this end the respondents were specifically asked to expand upon and explain their answers. Their explanations resulted in the following information. The 10% decision rule discussed above was used to determine which information to present.

In response to Question One, the majority of the interviewees said that the results from a MCCRES found their way into unit training plans and schedules. One of the most serious concerns brought out in response to this question concerned timing [Ref. 20] of the evaluation. If the MCCRES is given sixty days or more prior to deployment then the unit may experience substantial turnover of key personnel and nullify the results of the MCCRES by changing key players. The

TABLE 6.9

Distribution by Rank of Responses to Questions

Question #		Colonel	Lt. Colonel	Major	Captain	TOTAL
1.	a. None	0	4	1	0	5
	b. Planning	4	11	4	3	22
	c. Historical	0	3	4	0	7
2.	a. Positive	3	16	7	3	29
	b. Negative	0	4	2	0	6
3.	a. Positive	1	7	2	1	11
	b. Negative	2	11	6	0	19
4.	a. Positive	3	8	3	1	15
	b. Negative	0	9	3	0	12
5.	a. Positive	2	12	6	0	20
	b. Negative	0	5	1	1	7
6.	a. Positive	3	10	7	1	21
	b. Negative	1	9	4	1	15
7.	a. Oral	0	0	0	0	0
	b. Written	0	1	0	0	1
	c. Progressive	0	2	0	0	2
	d. Combination	4	17	10	3	34
	e. Other	0	0	0	0	0
8.	a. Chain	1	7	2	1	11
	b. Like	0	1	2	1	4
	c. All	3	10	7	1	21

TABLE 6.10

Distribution by Community of Responses to Questions

Question #		Ground	Aviation	TOTAL
1.	a. None	4	1	5
	b. Planning	15	7	22
	c. Historical	2	5	7
2.	a. Positive	21	8	29
	b. Negative	1	5	6
3.	a. Positive	7	4	11
	b. Negative	11	8	19
4.	a. Positive	9	6	15
	b. Negative	6	6	12
5.	a. Positive	12	8	20
	b. Negative	3	4	7
6.	a. Positive	12	9	21
	b. Negative	9	6	15
7.	a. Oral	0	0	0
	b. Written	1	0	1
	c. Progressive	2	0	2
	d. Combination	19	15	34
	e. Other	0	0	0
8.	a. Chain	9	2	11
	b. Like	2	2	4
	c. All	11	10	21

KEY: Ground: Infantry, Tanks, Artillery, Engineer
Aviation: Fixed wing, Helicopter, Air Control

alternative of this presents a serious dilemma. If the MCCRES is given too close to time of deployment, then little time exists to correct all but the most glaring deficiencies. Additionally since no real second evaluation is made of the shortcomings, the USMC may be deploying units who have not in fact corrected shortcomings identified during MCCRES.

A second major problem identified by the respondents is the timeliness with which the unit gets the actual MCCRES report. Some organizations present at least a rough of the printout to the unit at the time of the formal debrief, usually 12-24 hours after termination of the MCCRES. Others do not receive their formal printout until there is a complete staffing by division/wing, regiment/group; and in at least two cases the unit did not receive their formal feedback until they were on their deployment. One unit did not see their printout at all after the MCCRES. (This comment is provided as an exception to the 10% rule because of the seriousness of this situation.)

Responses to Question Two indicated that the current MCCRES gives sufficient information to improve combat readiness. In the case of the rotorywing MCCRES, three of the six rotorywing respondents indicated that more weight was needed on flying skills than is currently given by the MPS in Volume III. Generally the responses from the rotor wing community indicated too much emphasis is given to non-flight requirements and too little to flight skills. In addition responses from the fixed-wing community indicated that technology is changing

more rapidly than the MCCRES. With the implementation of the FA-18 aircraft and changes to other aircraft, the MCCRES evaluation needs to be changed to be current and realistic. In other words the aircraft can do a lot more than MCCRES requires. Discussions with the Readiness Branch indicate they are well aware of the problems caused by changing technology in the FA-18 and other new aircraft, and are presently improving the MCCRES requirements to test the aircraft at limits that more closely approximate its actual capabilities rather than against the less demanding F-4 Requirements.

A total of 13 respondents commented that MCCRES results are only as credible as the evaluators. The absence of standardization of evaluators and evaluator training, as well as the variances in how organizations pick evaluators had a great impact on the value perceptions and the worth of the MCCRES as a measure of the unit's readiness. This was expressed by six of the fifteen officers in the aviation community. Forty percent of the respondents submitted an unsolicited comment on the quality of the evaluators. If the evaluator is not regarded as highly qualified by his peers, then the evaluation is regarded with little weight. The question of evaluator bias is discussed in more depth by Wheeler [Ref. 5].

A final problem cited dealt with the MCCRES concept of comparing unit performance with published combat doctrine. Doctrine as codified in written manuals may be outdated. If so, the USMC is evaluating units by comparing their performance

to standards which would not be employed on the modern battlefield. An example of this cited by four infantry commanders is "maneuver warfare". Maneuver warfare is widely accepted by Western military analysts as the most promising way to fight and win any future war against Soviet tactics. However, maneuver warfare is not written into current Marine Corps doctrinal publications. This shortfall points out the need for distribution of MCCRES results to all training and doctrine commands to ensure they are aware of the strengths and shortfalls that units/individuals display on MCCRES.

The most common response to Question Three was negative. A percentage of 64.6% of the respondents said that they did not feel the computerized printout is the best way to display MCCRES results. Nineteen of thirty respondents indicated more subjective data was needed to fully understand the units' evaluations and to be able to take corrective actions. The computer printout provides a "Yes/No" evaluation, but it fails to provide the "why" and "what" [Ref. 36]. More details are needed to describe specific reasons for "No" marks and recommendations are necessary to help the unit find ways to improve. All those responding negatively (19 of the 30 respondents) indicated it was much more valuable to spell out the details of a shortfall and to suggest corrective action, than to simply provide a "Yes/No" on an evaluation sheet. Several innovative ideas have come out of this problem. One wing MCCRES officer now writes all comments directly on the MCCRES printout before

it is provided to the unit. The wing MCCRES officer said this facilitates a much more complete understanding of problem areas. The general concensus of the 30 respondents to this question was that the subjective, explanatory information is by far the most valuable to the evaluated unit and the percentile scores on the printout are probably of greater value to higher level headquarters for use in planning future training.

In response to Question Four, 15 of the 27 respondents or 55.6% agreed that the current format is not difficult to understand. In general those who indicated a willingness to reference the directives and compare the printout to the appropriate Volume were satisfied with the explanations provided therein. Those who said the current format is difficult to understand (12 of the 27 or 44.4%) did so based on a criterion of the inconvenience of the system, that is requiring both the printout and the Volume. This requires a good bit of tedious research to find the details of each MPS/Task/Requirement. The recent addition of a description of each MPS/Task/Requirement on the MCCRES printout should help reduce this problem. On the other hand, the brief description may cause even less referencing of the source document to obtain complete details. One suggestion was that key players from the unit to be evaluated should be given detailed classes and instructions on the MPS several weeks prior to a scheduled MCCRES. This has recently been started in one wing and the results are excellent. This contention was supported by both squadron commanders

questioned as well as by those in the Readiness Branch at Headquarters Marine Corps. Just as there is a need to educate evaluators, there is also a need to educate those to be evaluated [Refs. 5,25,26].

An added point made by five unit commanders was that the results must get out to all those concerned. If the response to an evaluation is delayed or the results simply become historical record, those who need to know at company, platoon, and squad level are never made aware of the results. Much emphasis is needed on informing all participants down to the individual Marine of the results of MCCRES [Refs. 15,37]. MCCRES results should be distributed to all detachments to ensure they know how their performance was evaluated.

Responses to Question Five indicated that the orders generally seem well written and easy to interpret. The same suggestion for education made on Question Four applies here. That is, any instruction given to key unit players will result in better overall understanding of MCCRES and allows the unit to better use the results.

Several specific shortcomings in MCCRES were also noted in response to Question Five. Those relating to aviation were addressed under Question Two. One infantry division has found some serious shortcomings, specifically in the failure to provide for intelligence gathering, fire support coordination, and allocation of tasks from higher headquarters. These three areas all apply to specific MPS's that need expansion or improvement.

Question Six by far evoked the most emotional and intense responses. Any time a comparative index is proposed it has the potential for both good and bad results depending on its use. Of 37 individuals interviewed, 55.4% favored some sort of use of comparative scores. Those opposed tended to do so based on the view that any comparison of scores provided a potential for use as a report card to compare units and specifically unit commanders. The primary objections to the use of comparative scores was based on the lack of overall standardization within MCCRES, especially the differences in evaluators, scenarios, terrain, and weather conditions.

Those who favored comparative scoring did so for various reasons. Four respondents thought comparative scoring had value, but only for higher headquarters, training, and doctrine commands. Seven others thought comparative scoring had value if shown to the unit in complete privacy. A final segment of ten respondents indicated that the comparative scoring had potential to create more unit competition. Thus, overall, only 10 out of the 37 respondents supported any sort of mass publication of comparative scores.

The results to Question Seven provided evidence that feedback must be provided in various forms throughout the exercise to be most effective. As seen in response to Question Three, 64.6% wanted more subjective feedback. In Question Seven that was reaffirmed. The respondents said that by far the most valuable feedback was obtained from verbal, subjective critiques

given immediately after an event has taken place. A total of 91.5% of the respondents indicated a combination of debriefs and written results is most desirable. The written results should not only include the objective numerical results of "Yes/No" markings, but also explanation of all the "No/N.A." markings.

Question Eight was most often answered with "all units," 60.2% of the time. The specific point made here was that the chain of command has an obvious need to know the results. All units could benefit from a generic trend analysis report. Trend analysis would provide a cross pollination of critical information throughout the Marine Corps and assist those involved in developing training and doctrine. Those favoring "all units" or "other like units" comprised a total percentage of 69.3%, provided a favorable response to the suggestion of receiving a generic trend analysis at regular intervals from the MCCRES Data Bank. The fact that no respondent provided any objection to this idea is indicative of its positive value.

C. SUMMARY

As can be seen in the next chapter the analysis of specific and general responses to the eight questions provided answers to the research questions posed by this thesis. In addition a number of important unsolicited comments, outside the scope of this study, were also obtained. These comments are presented in Appendix B.

VII. DISCUSSION AND CONCLUSIONS

A. ANSWERS TO PRIMARY RESEARCH QUESTIONS

The results of the research have provided answers to questions posed at the beginning of this project. The three primary research questions were:

(1) After MCCRES, what information should be fed back to the evaluated unit commander?

(2) In what form should the evaluation feedback be?

(3) What channel(s) should be used to provide the feedback to the evaluated unit?

A comprehensive feedback model is presented which incorporates the results for the three questions.

It was evident throughout this study that the unit commander faces many constraints: training time, material, equipment, logistics, and personnel. The information from MCCRES should be provided in such a way as to allow for better allocation of these scarce resources to the unit.

As discussed in Chapter II, the overall goal of the MCCRES is not only to provide a measure of unit readiness, but to provide effective feedback to the organization to enhance the opportunities to improve readiness by applying resources to areas identified as deficient by MCCRES. The theories underlying management control and evaluation, as presented in

Chapter III, provide a rich background for understanding how to perform the MCCRES evaluation and how to effectively use the results of an evaluation. In both theoretical and applied models of evaluation, information and feedback play an important role in both performing and using the results of an evaluation. In general the models of evaluation have common desirable characteristics such as: brevity, clarity, timeliness, interim products and reports, and responsiveness of feedback [Ref. 33].

Additionally, characteristics of the organizational control system [Ref. 43] such as goals, standards, measurement system, evaluation and reward system as well as the feedback loop play an equally important role in the evaluation models [Refs. 30, 32,33,35, and 38].

Based upon these findings and the results of a field study, a model for MCCRES feedback was developed. The model is presented in Figure 7.1. Each of the eight major elements of the model that affect the evaluated unit are explained below.

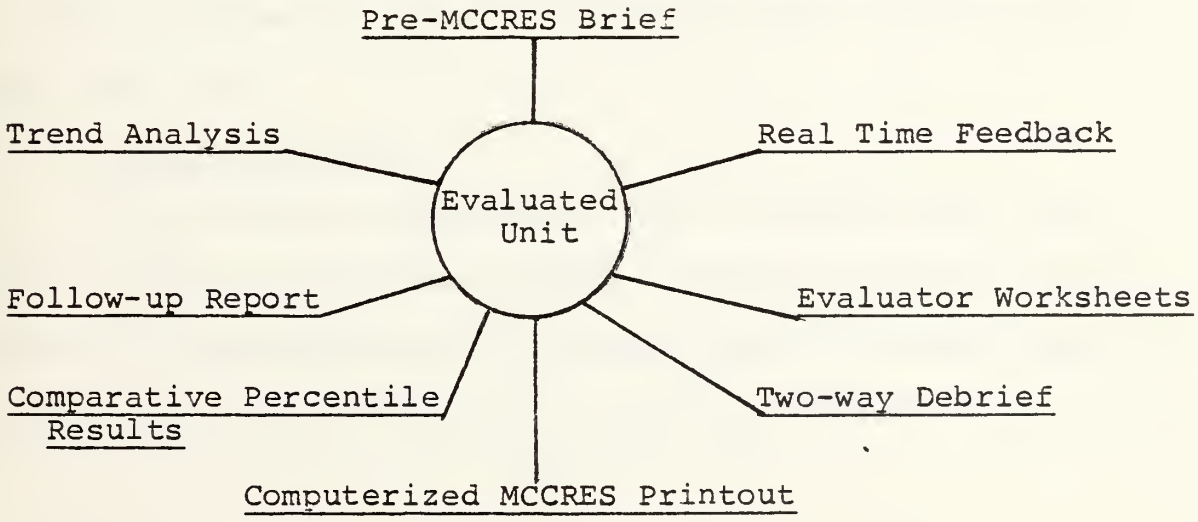


Figure 7.1. Model of MCCRES Feedback to an Evaluated Unit

1. Pre-MCCRES Briefing

A detailed orientation several weeks prior to MCCRES to provide a firm foundation for all key personnel. Explanation of appropriate Volumes of MCO 3501.2. Explanation of the details of each MPS and procedures for the evaluator allows the unit to maximize the potential from the MCCRES feedback [Ref. 36].

2. Real Time Feedback

Regular verbal feedback throughout the exercise by evaluators at each level. At any logical break in the scenario detailed evaluations of the most recent events should be provided by the evaluators. This provides data while the event is fresh in everyone's minds [Ref. 33].

3. Evaluator Worksheets

The Evaluator Worksheets should be provided directly to the evaluated element shortly after conclusion of the exercise. This provides an interim evaluation report and allows for maximum feedback to the specific element evaluated. It would be especially valuable to subunits and attachments who often receive only minimal feedback under current procedures [Ref. 36].

4. Two-way Debrief

At the end of exercise, twelve to twenty-four hours after the end of the formal MCCRES, a detailed debrief should be held for evaluators and key players from the unit evaluated. Opportunities should be given for two-way discussion to resolve

any confusion or disagreement particularly regarding subjective areas. The individuals from the evaluated unit should leave with not only a clear understanding of the deficiencies, but also with a clear understanding of what caused the "No" evaluations and suggestions for improvement [Ref. 33]. Since the commander of the unit evaluated is responsible for the employment of the feedback, he should have the flexibility to tailor the debrief to his leadership style. The commander may desire to have only a few selected evaluators and officers present or the unit commander may desire all evaluators and unit officers to be present.

5. Computerized MCCRES Printout

The computerized MCCRES printout with percentile scores and detailed amplifying remarks should be provided to the unit in a timely manner [Ref. 33]. It does a unit little good to get the detailed results when there is no time to correct deficiencies. What is timely can vary depending on deployment schedules, but getting a copy of the results in the hands of the evaluated unit so that action can be taken is essential. It is inexcusable to allow staffing to delay this critical information. Delays also put the unit further away from the MCCRES and it tends to become an historical document vice a map for future training.

6. Comparative Percentile Results

The data needed to compare units within a division or wing is currently available with limited research within the

division or wing files. Additionally most division or wing headquarters are well aware of how their scores compare with other like units. Usage of general MCCRES data bank to provide comparative scores, medians, and standard deviations should be provided to major headquarters staff, training, and doctrine commands for the limited purpose of planning future resource allocation and to develop training doctrine. These comparative results should be limited to Section/MPS/Task scores and should not include any sort of comparative final score for the units as a whole. Providing any sort of overall scores that could be used to compare individual units tested could well have a negative impact because of the many variances in evaluation conditions that exist. It is further recommended that these comparative results be directed only at division/wing level or higher commands to reduce the chance of any type of unit comparisons.

An example of comparative percentile results that could be provided to division/wing level for use in planning future training is presented in Figure 7.2.

PAST SIX MONTH MCCRES RESULTS

			Division/ Wing	Overall Marine Corps
Section	2.0	Operations Performed	93.2%	91.1%
MPS	2.A	Actions by Marines	97.8%	98.4%
Task	2.A.1	Discipline	86.4%	90.2%

Figure 7.2. Sample of Comparative Summary Percentile Results

7. Follow-up Report

Currently no follow up evaluation is made to confirm that the deficiencies have been corrected. Some type of final check is needed. This check would best be accomplished with little formality. Since the unit commander has the responsibility for application of MCCRES feedback to improve unit readiness, it is best left to the unit commander to do the final check which certifies that deficiencies have been corrected. Resource reallocation from outside the evaluated unit likewise should be certified at the appropriate level. The key issue here is that the unit must be deployed at the highest level of combat readiness and verification of correction of MCCRES deficiencies at least on an informal basis is essential. This follow-up should be made as simply as possible. The unit commander can appropriately perform this certification based on his own experience and judgment. A formal follow-up inspection is neither necessary nor desirable.

8. Trend Analysis

To gain a higher level of across-the-board readiness, a trend analysis would be of value to all units. The MCCRES data base represents a resource that could be used to keep the Marine Corps informed of its overall strengths and weaknesses. Special emphasis should be made on getting these results to training and doctrine organizations throughout the Marine Corps.

B. ANSWERS TO SECONDARY RESEARCH QUESTIONS

The results of the research provided answers to the secondary research questions posed at the beginning of the project. The three secondary research questions were:

(1) Validity of comparing MCCRES results given under differing conditions.

(2) MCCRES contribution to effective training.

(3) Time availability and follow up to ensure correction of deficiencies identified during MCCRES.

A first response to the question of the validity of comparing MCCRES results given under differing conditions might be to say that such comparisons can only be made if complete standardization is achieved. Although complete standardization for purposes of evaluation may seem to be desirable, this may not be feasible. Since various Marine Corps units (east coast, west coast, overseas) are preparing for different missions, it is desirable to simulate their expected combat employment through the use of different scenarios, terrain, and even MPS's. Additionally the Marine Corps has other exercises, such as the Combined Arms Exercise or CAC's, which are used to evaluate under standard scenario, terrain, and evaluators, but they have a more limited purpose than MCCRES. Because of the broader purposes of MCCRES, complete standardization is probably not desirable. In addition it can be questioned as to how much standardization is really necessary to have an effective evaluation system. The performance evaluation system

used for promotions is one familiar to all Marine officers. It can be argued that the MCCRES certainly has much more objectivity than the Performance Evaluation System [Ref. 47]. Thus for its intended purpose, MCCRES appears to provide a relatively high degree of objectivity when compared with other military systems and the results are likely to be useful, at least for generic comparisons and to identify trends.

In response to the question of MCCRES's contribution to effective training, it is evident from the data gathered for this thesis that MCCRES has the potential to, and currently does, improve unit training. Many units train to MCCRES standards and go so far as to use actual MCCRES Section/MPS/Task/Requirements to structure their unit training. Therefore as the Individual Training Standards (ITS) are developed for all units, it is essential that they be closely compared with MCCRES standards so that the training and evaluation development move in the same direction [Refs. 5,28,29].

The third question, time availability to correct MCCRES deficiencies, has previously been discussed. No doubt more time would allow for more training in deficient areas. However, the question of follow up is also critical. At least an informal re-validation of deficient areas is needed to ensure the effectiveness of the MCCRES.

C. SUMMARY

This research has provided detailed answers to the questions posed at the beginning of the study. The feedback to

the unit is the key element to making the MCCRES of value to the unit evaluated. The purpose of MCCRES is to provide timely and accurate evaluation of the force readiness. Key to improving readiness is identification of strengths and weaknesses, and providing timely and thorough feedback to the evaluated unit and its chain of command. The more timely and thorough the feedback, the higher the likelihood of improved future readiness. The MCCRES is currently viewed as a sound, valuable evaluation system. However, as this thesis has demonstrated, the feedback to the units can be improved.

D. STUDY RECOMMENDATIONS

The feedback model developed and displayed as Figure 7.1 should be incorporated as the minimum acceptable procedure for providing feedback from any MCCRES. To accomplish this the eight steps in the feedback model should be followed during each evaluation. The following information should be routinely provided as feedback.

Pre-MCCRES Briefing--to key MCCRES players from the evaluated unit

Real Time Feedback--distributed to all those evaluated

Two-way Debrief at end of exercise--tailored to needs of the unit commander to ensure full understanding of evaluation results

Computerized MCCRES Printout--provided in a timely manner to allow new resource allocation prior to deployment

Comparative Percentile Results--to help direct unit training and for incorporation by individual training and doctrine commands

Follow-up Report--done informally by unit commander to ensure closure of feedback loop by correction of identified deficiencies

Trend Analysis--to support future training as well as changes in doctrine.

Implementation of these recommendations would suit the stated needs of fleet units as well as serve the intended MCCRES purpose of providing an evaluation of unit readiness to higher headquarters.

E. RECOMMENDATIONS FOR FUTURE RESEARCH

The unsolicited comments provided ripe areas for further research. Any item listed in Appendix B could be researched and could provide information for program improvement.

F. SUMMARY OF STUDY

The purpose of this study was to determine the most appropriate and effective manner in which to provide feedback to the unit commander from a MCCRES. To this end research was conducted into the areas of management control and evaluation theory. Additionally specific research was conducted in the area of existing systems which measure or evaluate readiness.

The study was approached from a multi-disciplinary background with a detailed emphasis on the economic question of how better distribution could be made of the scarce resources of manpower, equipment, and training time based on the results of MCCRES. To answer the questions a detailed field study was conducted in which interviews were completed with 37 Marine officers of rank from Captain to Colonel who have had involvement with MCCRES as key billet holders. Additionally much of

the original documentation that laid the groundwork for the development of MCCRES was reviewed along with interviews and visits with some of the original developers of the system.

The results of the study are displayed as an eight step feedback model which is based on accepted theory in the fields of management control and evaluation theory, as well as the results of the field study. These results are communicated to the reader as a model in Figure 7.1 which is comprised of the following elements:

(1) Pre-MCCRES Briefing

(2) Real Time Feedback

(3) Evaluator worksheets

(4) Two-way Debrief at the end of Exercise

(5) Computerized MCCRES Printout

(6) Comparative Percentile Results

(7) Follow-up Report

(8) Trend Analysis

The incorporation of this model as standard MCCRES feedback procedure will significantly enhance the value of the results to the evaluated unit and will improve the understanding of the resource allocation needs at all levels.

APPENDIX A

SAMPLE MARINE CORPS COMBAT READINESS EVALUATION SYSTEM SOFTWARE PRINTOUT

2.0 INFANTRY BY SECTION

SECTION		WEIGHT	EVAL	CUM WT
A)	OPNPERFORM	100.00	95	68.97
B)	STDTACTICS	45.00	92	31.03
C)	SPECIALOPS	18.00	N/A	0.00
D)	EXTERSUPTD	18.00	N/A	0.00
	VOLUME TOTAL	100.00	94	100.00

2.0 INFANTRY BY MPS

2.A OPNPERFORM

MPS		WEIGHT	EVAL	CUM WT
1)	ACTNSBYMAR	100.00	92	33.16
2)	CMD-CONTRL	58.00	95	19.23
3)	FSUPTCOORD	50.00	100	16.58
	SECTION TOTAL	100.00	95	68.97

2.B STDTACTICS

MPS		WEIGHT	EVAL	CUM WT
1)	SURFASSLT	100.00	N/A	0.00
2)	HELIASSLT	80.00	N/A	0.00
3)	MVTOCONTCT	32.00	100	4.97
4)	ATTACK	80.00	96	12.41
5)	NIGHTATTCK	28.00	68	4.34
6)	DEFENSE	60.00	93	9.31
7)	RETROGRADE	20.00	N/A	0.00
8)	TACP	75.00	N/A	0.00
	SECTION TOTAL	45.00	92	31.03

2.C	SPECIALOPS	N/A
2.D	EXTERSUPTD	N/A
2.0	INFANTRY	BY TASK
2.A	OPNPERFORM	
2.A.1	ACTNSBYMAR	

TASK	WEIGHT	EVAL	CUM WT
1) DISCIPLINE	100.00	100	3.64
2) DISPERSION	91.00	100	3.31
3) COVER	100.00	100	3.64
4) CAMOUFLAGE	82.00	100	2.98
5) SECURITY	100.00	100	3.64
6) RECONPATROL	64.00	84	2.33
7) COMBATPTRL	55.00	100	2.00
8) ELECTRONIC	82.00	43	2.98
9) NBC	55.00	N/A	0.00
10) CHEMICAL	55.00	100	2.00
11) ENEMYAIR	82.00	100	2.98
12) POWS	55.00	80	2.00
13) CASUALTIES	45.00	80	1.64
MPS TOTAL	100.00	92	33.16

2.0 INFANTRY BY REQUIREMENT

2.A OPNPERFORM

2.A.1 ACTNSBYMAR

2.A.1.1 DISCIPLINE

REQUIREMENT	WEIGHT	EVAL	CUM WT
1) SELF	100.00	100	0.53
2) WPNS	80.00	100	0.42
3) MAINT	80.00	100	0.42
4) FIRE	100.00	100	0.53
5) SUPPLY	50.00	N/A	0.00
6) COMM	100.00	100	0.53
7) NOISE	90.00	100	0.47
8) LIGHT	90.00	100	0.47
9) HYGENIC	50.00	100	0.26
TASK TOTAL	100.00	100	3.64

2.A.1.2 DISPERSION

REQUIREMENT	WEIGHT	EVAL	CUM WT
1) INDIVIDUAL	100.00	100	0.82
2) UNIT	80.00	100	0.66
3) LEADERS	100.00	100	0.82
4) MATERIEL	48.00	100	0.39
5) WEAPONS	76.00	100	0.62
TASK TOTAL	91.00	100	3.31

APPENDIX B

SUMMARY OF UNSOLICITED COMMENTS

Because of the technique employed of encouraging expansion and discussion on each question, numerous ideas were brought forth. Although these were not specifically evaluated, they are of potential importance and should be at least considered by anyone interested in MCCRES. The comments identified herein were selected based on their logic and potential impact on MCCRES. No attempt was made to support or disprove these remarks; such an analysis is, therefore, left for future research.

A. PRESENT APPROACH TO MCCRES

Few if any units fail. To several respondents the MCCRES credibility is in serious doubt because all units seem to pass with very similar overall scores. As a result of this, the final MCCRES grade is not very meaningful, especially with no other grades with which to compare the score. As a result of this, two of those questioned indicated they saw no value at all to overall unit grade. Consideration should be given to doing away with the unit grade and just providing comparative-trend analysis scores on a generic basis. This would do away with the informal comparison of scores that now takes place and provide better support of the intended purpose of not using the MCCRES to compare the overall readiness of units evaluated.

B. TWO MCCRES'S

The general feeling among all the respondents is that MCCRES is a superb opportunity for training with more assets allocated to the evaluated unit than for most other exericses. Some suggest a MCCRES should be conducted at both the beginning and end of a training cycle; to evaluate improvements and to measure the unit against itself. This would allow evaluators to be more critical, because the unit would identify strengths and weaknesses early and adjust training objectives accordingly. Although it is a costly suggestion, it has potential to further improve readiness.

C. ANALYZE INDIVIDUALS

The Command needs to know not only strengths and weaknesses of unit/subunit performance, but the evaluated unit commander also needs an independent assessment of individual leadership strengths and weaknesses. Providing MPS's that require individual evaluation of leaders at all levels would assist the unit commanders to reinforce his own observations and to be more aware of where he needs to place emphasis.

D. TACTICAL STERILITY

MCCRES rewards those who follow doctrine explicitly and avoid innovation. In maneuver warfare innovation and flexibility are the key to success. Yet MCCRES measures performance by comparison with standard doctrine. Problems here arise not out of the MCCRES procedure, but the fact that much of the

doctrine upon which MCCRES is based is rapidly being outdated. To have an effective/believable evaluation, the whole cycle of doctrine and inclusion of new doctrines in MCCRES must be maintained. The general thought is MCCRES rewards those who "play the game" and may punish those who are "ahead of written doctrine". Some respondents said sufficient strides have been made to overcome this in certain suits, but others said this remains a widespread system problem.

E. LEVEL OF APPLICATION

Although Reference 1 states that the Fleet Marine Force Commanding General is responsible for application of MCCRES, the authority is delegated to various levels. Some of the control is held tightly at the division/wing levels; others delegate the actual evaluation to regiment/group level. These differing procedures greatly change the standardization of evaluation and reduce the pool of potential evaluators.

F. GROUPING AND TIMING FOR EVALUATION

Most every MCCRES has a different grouping of unit types. For instance some organizations evaluate battalion-landing team units with the attached artillery, engineers, tanks, etc., all evaluated using the MCCRES. Others evaluate only the infantry battalion; while some organizations use the MCCRES to evaluate artillery as battalions and others do not. The Marine Corps standard is that each unit be evaluated using MCCRES every two years, to ensure that all units in fact are

evaluated. A detailed scheduling system should be incorporated to ensure that no units are missed in the process.

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